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# THE MEDIEVAL AND THE PRESENT CATHOLIC POPULATION IN THE VILLAGE OF RĂCHITENI (IAȘI COUNTY). AN ANTHROPOLOGICAL STUDY

GEORGETA MIU, MARIA ȘTIRBU, MARIA ISTRATE

The paper discusses the anthropological structure and biological evolution, in time, of the medieval population of Răchiteni (Iași county), comparatively with the present-day population. Analysis of the main cephalo-facial and bodily sizes and proportions has evidenced a similar biomorphological and typological structure. Thus, the skull of the two series is not different, being, on the average, brachy crane and, respectively, brachycephal, hypsicrane-hypsicephal, metriocrane-metriocephal, the forehead being eurymetopic and the occipital bone predominantly middle bulged. The face is generally mesenic, the nose is leptorrhine with the old populations and incipiently chamaerrhine with the present ones. Mention should be also made of other modifications that have appeared in time in the biological evolution of the Răchiteni population, expressed by a tendency of brachycephalisation and also by an increase in stature of the present population. Typologically, both populations are characterized by the same Dinaro-Mediterranean-Northern common fund in which the Mediterranean elements represent an irrefutable proof on the presence of the native population in this region, as well as of its continuity along the centuries.

## INTRODUCTION

The study of some human osteological elements discovered in the medieval cemeteries of Răchiteni (XVIth–XVIIth centuries) and Gherăești (XVIth century), as well as of the present populations from the same places, provided valuable information on both their anthropological structure and biological evolution in the last 3–4 centuries. At the same time, the data obtained, corroborated by other information offered by archeology, history, linguistics, ethnography, etc., may contribute to the elucidation of the origin and evolution of the much discussed and under debate “Csango phenomenon” (Csango = Hungarians living in the Bacău region, Moldavia).



## THE STUDY MATERIAL

The material for the study of the medieval period is represented 181 skeletons (discovered in 147 tombs), of which 115 belong to the 20-x years population (52 men and 63 women), the 66 remaining subjects being children that died between 0–14 years, and teenagers.

The diggings made in the medieval necropole of Răchiteni were led by D. Hordilă and V. Ursachi – archaeologists at the Districtual Museum of History in Roman [4].

From the present population of the Răchiteni village, a group of 187 subjects (85 men and 102 women), with ages between 20 and 60 years, were investigated.

## COMPARATIVE ANALYSIS OF THE ANTHROPOLOGICAL DATA

The position and dispersion parameters of the main dimensional and conformational peculiarities which characterize – at the populational level – the cephalic skeleton, on the basis of which the typological components are also stated, are presented in Table 1, while the distribution – on categories – of the main indices, is plotted graphically in Figs. 1 to 7.

**The neural skull** of the medieval population is, on the average, long in men, and medium-long in women, and of the large type in both sexes (with a tendency towards very large in men), the cranial index being – according to such dimensions – of the brachycrane-type, with almost identical values in the two sexes. The distribution, on categories, of this character is evidenced, for both groups, by the absence of the extreme dolichocrane forms (hyperdolicho- and ultradolichocrane) and also by the prevalence of the brachycrane type skulls which – together with its hyperbrachy and ultrabrachycrane variants – attain ratios of majority (68% in men and 73.08% in women). With both sexes, the mesocrane category represents about 1/3 of the total number of cases (*i.e.*, 24% in men and 23% in women), the dolichocrane one occurring only exceptionally (Fig. 1).

The data collected for the present population of Răchiteni [7] evidence the same conformation of the cranial-brachycephale brain pan, although more accentuated than in the medieval population, which results both from the comparison of the cranial indices' average values and from their individual distribution on categories. Consequently, if, in the medieval series, the values of the cephalic indices are moderately brachycrane (82.13 in men and 82.83 in women), in the present population they get an intense brachycephalic character, in the feminine series the cephalic index being even of the hyperbrachycephalic type (84.93 and, respectively, 86.08). The individual distribution of these indices evidences, too, the intensely brachycephalic character of the present population, in which this category, together with its variants (*i.e.*, hyperbrachy and

ultrabrachycephalic) is present in ratios of about 82% in men and, respectively, of about 89% in women (Fig. 1).

Table 1

Statistic values of the main, absolute and relative, cephalo-facial and stature dimensions in the populations under study

| Bodily sizes and dimensions | Medieval population |          |        |          | Present population |          |        |          |
|-----------------------------|---------------------|----------|--------|----------|--------------------|----------|--------|----------|
|                             | Men                 |          | Women  |          | Men                |          | Women  |          |
|                             | M                   | $\delta$ | M      | $\delta$ | M                  | $\delta$ | M      | $\delta$ |
| G-Op                        | 180.45              | 5.71     | 172.26 | 5.63     | 189.60             | 6.74     | 178.45 | 6.56     |
| Eu-Eu                       | 149.17              | 6.97     | 142.90 | 8.21     | 160.91             | 5.64     | 153.44 | 5.44     |
| Ft-Ft                       | 102.48              | 5.21     | 99.08  | 4.67     | 115.60             | 5.18     | 113.36 | 4.05     |
| Zy-Zy                       | 133.98              | 5.49     | 127.78 | 7.73     | 145.13             | 6.30     | 138.61 | 5.55     |
| Go-Go                       | 102.97              | 6.25     | 94.62  | 5.55     | 114.78             | 5.95     | 109.15 | 6.04     |
| N-Gn                        | 123.62              | 6.12     | 107.85 | 5.16     | 127.28             | 7.40     | 117.54 | 6.26     |
| N-Sto                       | 70.65               | 4.12     | 65.40  | 4.36     | 76.91              | 4.95     | 71.27  | 4.42     |
| N-Sbn                       | 54.99               | 3.44     | 50.91  | 2.84     | 54.35              | 4.36     | 50.14  | 3.84     |
| Al-Al                       | 25.03               | 2.08     | 24.89  | 1.88     | 35.70              | 2.59     | 32.80  | 2.57     |
| Po-B (T-V)                  | 119.89              | 4.92     | 113.91 | 5.94     | 128.99             | 4.94     | 123.46 | 5.04     |
| Cephalic index              | 82.13               | 5.15     | 82.83  | 5.80     | 84.93              | 3.36     | 86.08  | 3.48     |
| Superior facial index       | 52.04               | 3.45     | 51.95  | 5.74     | 53.04              | 3.78     | 51.37  | 3.65     |
| Total facial index          | 90.45               | 4.97     | 89.45  | 7.20     | 87.58              | 4.85     | 84.32  | 5.44     |
| Nasal index                 | 46.39               | 4.92     | 48.18  | 5.04     | 65.46              | 7.23     | 65.61  | 7.32     |
| Vertico-longitudinal index  | 66.18               | 3.02     | 66.25  | 3.58     | 68.24              | 3.17     | 69.35  | 3.12     |
| Vertico-transversal index   | 80.16               | 3.62     | 80.66  | 4.73     | 79.99              | 3.77     | 80.12  | 3.34     |
| Fronto-parietal index       | 69.01               | 3.90     | 69.61  | 3.94     | 71.74              | 2.94     | 73.92  | 2.79     |
| Jugo-parietal index         | 88.95               | 3.50     | 90.63  | 4.22     | 90.14              | 3.07     | 90.39  | 3.15     |
| Jugo-mandibular index       | 76.33               | 4.01     | 77.17  | 2.77     | 79.01              | 4.19     | 78.13  | 4.21     |
| Fronto-jugal index          | 76.98               | 3.67     | 78.03  | 4.05     | 79.67              | 3.34     | 81.52  | 3.08     |
| Stature                     | 168.11              | 4.45     | 159.42 | 4.73     | 174.54             | 7.13     | 160.85 | 5.78     |

PERCENTUAL DISTRIBUTION, ON CATEGORIES, OF THE MAIN CEPHALO-FACIAL AND STATURE CONFORMATIVE FEATURES

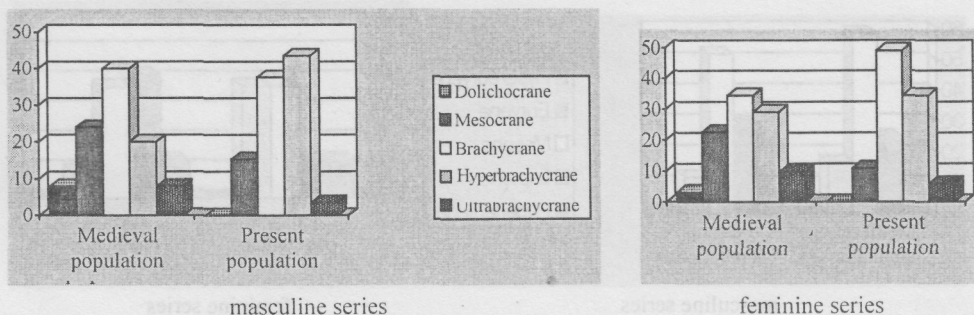


Fig. 1. – Cephalic index.

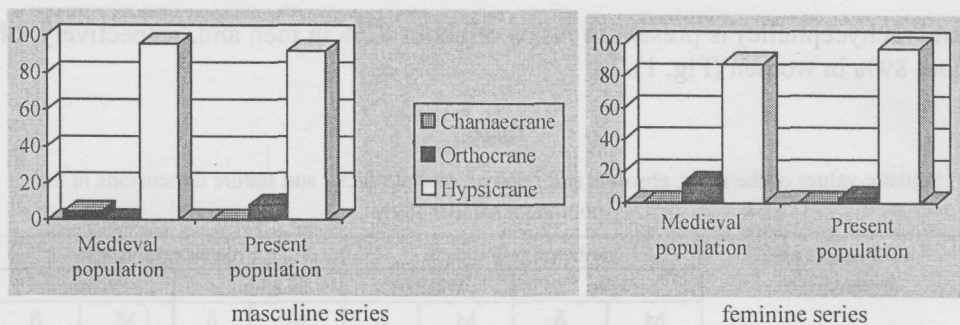


Fig. 2. – Vertico-longitudinal index.

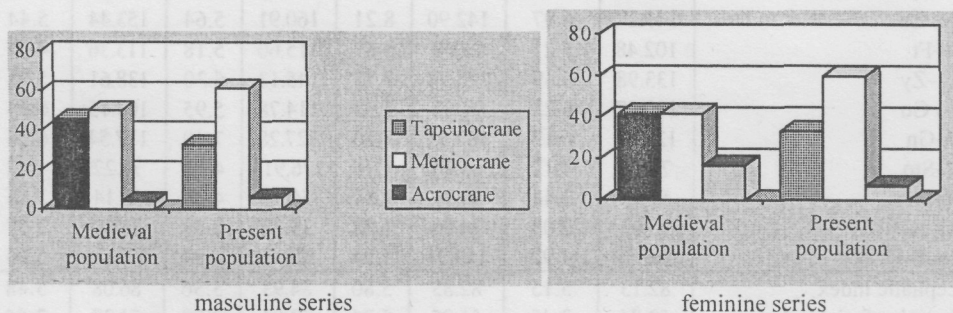


Fig. 3. – Vertico-transversal index.

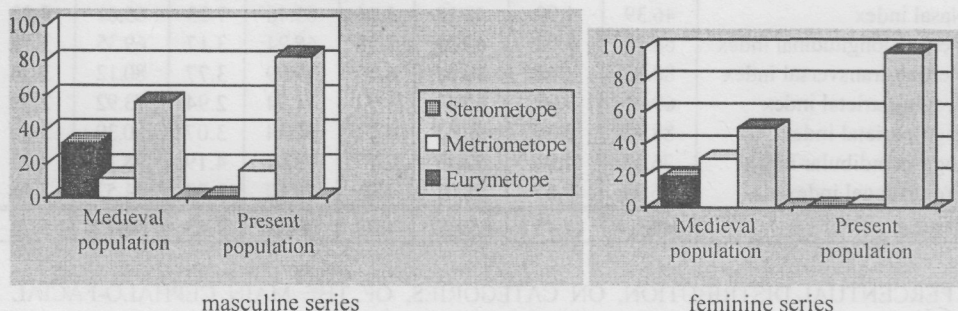


Fig. 4. – Fronto-parietal index.

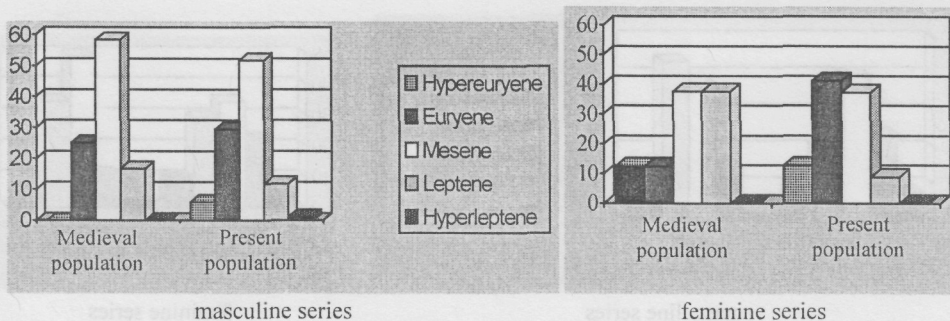


Fig. 5. – Superior facial index.

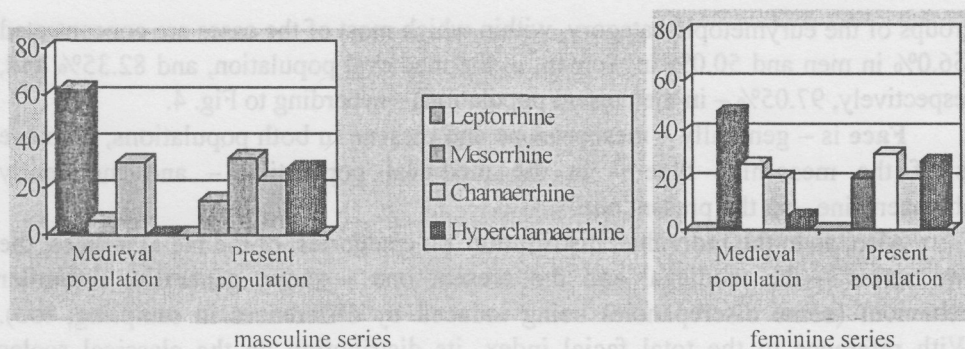


Fig. 6. – Nasal index.

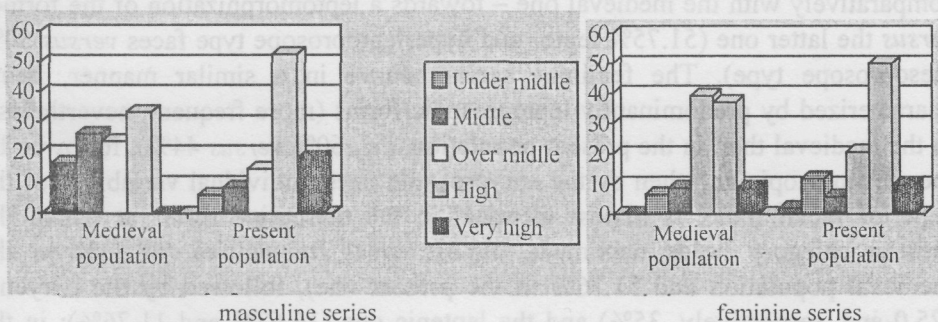


Fig. 7. – The stature.

Skull's height evidences, in the medieval population, for both sexes, average values belonging to the same – high – category, the longitudinal porio-bregmatic index being of the hypsicrane type, in both the masculine and the feminine series, while the transversal porio-bregmatic one is also of the same metriocrane type. The distribution, on categories, of these indices, evidences, indeed, the almost exclusive predominance of the hypsicrane-type skulls (about 95% in men and about 87% in women), in the case of the vertical-longitudinal index, and a close proportion between the tapeinocrane (about 46% and, respectively, 42%) and metriocrane (50% and, respectively, 42%) forms in the case of the vertical-transversal indices (Figs. 2–3).

If considering the absolute and relative values calculated for the present population, a situation similar to that found in the medieval population may be observed – *i.e.*, skulls which are, on the average, hypsiccephalic (91.76% in men and 97.05% in women) metriocephalic (61.17% and, respectively, 59.80%) and tapeinocephalic (although to a lesser extent, *i.e.*, 32.94% and, respectively, 33.33%) (Figs. 2–3).

The frontal region is, on the average, large in both populations. Proportionally to the neuroskull's maximum largeness, the fronto-parietal index belongs to the

groups of the eurytopic category, within which most of the cases are concentrated (56.0% in men and 50.0% in women, in the medieval population, and 82.35% and, respectively, 97.05% – in the present population) – according to Fig. 4.

**Face** is – generally – mesoprosope and mesene in both populations, the nose is of the mesorrhine type – in the medieval population – and incipiently chamaerrhine – in the present one.

Also, as to the individual distribution, on categories, of the facial indices, the two series – the medieval and the present one – show, generally, a similar behaviour (some discrepancies being induced by differences in sampling, too). With reference to the total facial index, its distribution on the classical scales shows some modifications of the facial skull in the present masculine population – comparatively with the medieval one – towards a leptomorphization of the former *versus* the latter one (51.75% lepto- and hyperleptoprosope type faces *versus* 50% mesoprosope type). The feminine series behave in a similar manner, being characterized by predominantly leptoprosopic forms (more frequent, nevertheless, in the medieval than in the present population, *i.e.*, 60% *versus* 44%), followed by the mesoprosopic and then by the euryprosopic ones. Individual variability of the superior facial index is almost identical in the masculine series at which the mesene category holds maximum, almost equal frequencies (68.33% in the medieval population and 51.76% in the present one), followed by the euryenic (25.0 and, respectively, 35%) and the leptenic one (16.67% and 11.76%); in the feminine series, a higher frequency of mesenic and leptenic forms is to be observed in the medieval population (equal values, of 37.50%, being recorded), comparatively with the present one, in which the euryenic forms represent, nevertheless, more than half of the cases (54%), followed by the mesenic ones (37.35%) (Fig. 5).

As to the distribution, on the classical scales, of the nasal index, its quite restricted variability should be observed, in the medieval population, between the leptorrhine (about 62% in men and about 77% in women) and chamaerrhine (about 32% and, respectively 21%) forms, the mesorrhine ones being more frequent in women (about 26% *versus* 6%). In the present population, similar ratios of mesorrhine type noses (about 33% in men and about 30% in women), chamaerrhine type (about 24% and, respectively 21%) or hyperchamaerrhine type (about 28% and, respectively, 27%) are to be met (Fig. 6).

As to the morphological aspects, the two populations also show numerous similarities. Thus, mention should be made firstly of the occipital bone's curving degree, which is predominantly medium curved or curved, the flattened shapes being more frequently met in the present population.

Malars are moderately developed in both populations (in about 46% of the medieval and in about 62% of the present one), although some robust forms are met with, more frequently in the medieval population (about 35%), comparatively

with the present one (about 20%, and mainly with the female sex); fragile malars occur in similar ratios (about 20% in the old population and about 25% in the present one). As to their position, malars are predominantly intermediary in both populations, although higher ratios (of about 60%) are to be recorded in the present one, comparatively with the medieval population (about 38%), in which the temporalized and frontalized forms are better represented. One should outline the fact that, in the present population, the forms of malars, developed and placed in frontal position, characterize a large part of the feminine population, in which the eastern-Europoid type is, actually, better represented.

As to the stature of the two populations, the average values indicate a taller one in the present population, comparatively with the medieval one, on the classical scale, this parameter being, generally, of the high type in the former and of the supramiddle one (although at the superior limit of the category) – in the latter. Such a difference is also reflected in the distribution – on categories – of this feature, especially for the masculine series, in which the tall and very tall statures attain, in the present population, ratios of about 71%, *versus* only 33% – the value recorded in the medieval population where, nevertheless, the supramiddle and middle statures represent 50% of the cases. In women, too, the supramiddle and tall statures are also predominant, although in different ratios, as follows: the tall statures are better represented in the present population, comparatively with the medieval one (about 50% *versus* 37%), while the supramiddle statures are more frequent in the latter (about 39% *versus* 21%) (Fig. 7).

## CONCLUSIONS

The analysis of the dimensional, conformational and morphological characters of the medieval series from Răchiteni indicated the presence of a typological polymorphism in which the Dinaric elements are prevalent (about 46%); besides them, the autochthonous-Mediterranoid type elements (some of them preserving, too, a few exclusively fragilized protoeuropoid reminiscences) represent, as to their frequency, an important typological compound (about 22%); to this Dinaro-Mediterranean fund, one should also add some northern and eastern-Europoid elements, the former occurring more frequently (about 18% *versus* 13%). As to the Mongoloid type features, they were observed on only one masculine skeleton.

The anthropological investigations developed on the present population have evidenced, at a general level, a bio-morphological and, respectively, typological structure quite similar to that of the medieval population of Răchiteni [6, 7], where the researchers have noticed the same *“Northern-Dinaro-Mediterranoid fund”*, to which some east-Europoid influences and – only exceptionally, some Mongoloid-type elements (only one case) – should be added.



In parallel to this, the comparative analysis of the different cephalo-facial and bodily dimensional and conformational values in the two – medieval and present – populations has put into evidence certain modifications having intervened during the biological evolution of the Răchiteni population in the last 3 centuries, which, nevertheless, did not modify the basic typological fund. Special mention should be made here of the brachycephalization tendency, manifested in the present population, according to which the cranial index becomes pronouncedly brachy crane – a phenomenon presently noticed in the Gherăești population, too [2, 3, 5].

As to the stature, according to the average values of this parameter, the present population is characterized by a tall size, while the medieval one – by a supramiddle one. However, the differences are not significant, stature's average values occurring – in the old population – at the upper limit of the middle category.

Concerning the typological aspect, these small cephalo-facial and size differences observed between the two populations are expressed by slightly different frequencies among the anthropological types met, yet without modifying the basic typological fund. Thus, if both populations show the same typological fund – the Dinaro-Mediterranoid-Northern one – the observation to be made is that the elements of the Dinaric type are better represented in the medieval than in the present population (a ratio of about 46% *versus* one around 30%), while those of the northern type are, on the contrary, more rare in the former population, comparatively with the latter (about 13% *versus* about 27%). Also, in the medieval series, the eastern-Europoid elements have a slightly lower frequency than in the present population, although they always occur in combination with other elements, and not as a classical type.

To conclude, one should outline the fact that the two populations – having lived at a distance of a few centuries – do not show significant differences from a bio-morphological point of view, once they have the same, common, typological fund, *i.e.*, the Dinaro-Mediterranoid-northern one, in which the Dinaric, northern and local Mediterranean elements prevail. The presence of the last ones constitutes an irrefutable proof of the continuous presence of the native population which, in time, came to assimilate some groups of populations coming from neighbouring areas (eastern ones, probably) – which also explains the typological polymorphism manifested both in the medieval and in the present period. Worth mentioning is also the fact that the comparative study of the late medieval and present population of Gherăești has evidenced the same typological picture as that of the medieval and present population of Răchiteni, characterized by a Dinaro-Mediterranoid-Northern fund, prevailing in the medieval population being the “Dinaro-Northern-type elements in men, and Mediterranean-Dinaroid ones in women”, while, in the present population, the Dinaro-Mediterranoid elements in men and, respectively, the northern-mediterranoid ones in women predominate [1].

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## LE DÉVELOPPEMENT MÉTRIQUE CÉPHALO-FACIAL DES ENFANTS SOURDS-MUETS D'UNE ÉCOLE SPÉCIALE BUCARESTOISE\*

ELEONORA LUCA, CORNELIU VULPE, MONICA PETRESCU, MARIUS RADU,  
NICOLAE LEASEVICI, LĂCRĂMIOARA MUREȘAN

**The cephalo-facial metric development of deaf-and-dumb children from a special school in Bucharest.** This paper is part of a medical-anthropological study on a sample of 165 deaf-and-dumb children between 7 and 17 years from the Special School no. 2 in Bucharest. The research was run between 2002 and 2003. The estimation of the cephalic segment development was realized comparing the metric phenotypes of deaf-and-dumb children with the average values from normal children in Bucharest ("z") in relation with age and sex. The results emphasize that the cephalo-facial metric development of deaf-and-dumb children is generally good, compared with the average values of normal children. Only the deaf-and-dumb boys differ significantly by the facial index which illustrates a low face. The analyses of the metric cephalo-facial variability emphasize that the deaf-and-dumb children have an increased frequency of small and very small phenotypes especially for the height of the cephalic calotte and face evaluated as regards dimensions and conformation in both sexes.

Notre étude d'anthropologie médicale sur les enfants sourds-muets a commencé pendant les années 2002–2003. Deux travaux antérieurs présentent des aspects concernant les dermatoglyphes et le développement staturo-pondéral des enfants de l'École spéciale n° 2 de Bucarest (I<sup>re</sup>–VIII<sup>e</sup> classes) (4,5).

Notre démarche entreprend d'apprécier le développement céphalo-facial des enfants sourds-muets par rapport aux enfants normaux selon l'âge et le sexe (1–3).

### MATÉRIEL ET MÉTHODE

Les données fondamentales de l'étude sont les valeurs absolues des neuf caractères dimensionnels céphalo-faciaux sur la base desquels on a calculé huit

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\* Les auteurs remercient le personnel enseignant de l'École Spéciale n° 2 de Bucarest pour son aide précieuse.

caractères relatifs (indices anthropométriques) (Tableau 1). Ces données ont été récoltées sur 165 enfants sourds-muets âgés de 7–17 ans (59 garçons et 106 filles).

Les échantillons sélectionnés selon l'âge et le sexe ne sont pas statistiquement représentatifs. Pour apprécier la position de chaque enfant par rapport à la population-étalon (la valeur moyenne du caractère métrique chez les enfants normaux selon l'âge et le sexe) ont été utilisées les distances normées:

$$z = (x - X) / \sigma$$

où

$z$  = la variable (la distance) normée;

$x$  = la variable du caractère (la valeur individuelle);

$X$  = la moyenne-étalon;

$\sigma$  = l'écart-type de la moyenne-étalon.

On a calculé la valeur moyenne de « $z$ » selon le caractère et le sexe (Tableau 1) (4, 6).

Pour apprécier la variabilité des phénotypes métriques des enfants sourds-muets on a établi sur base de la moyenne-étalon cinq intervalles (catégories) de variabilité pour chaque caractère en fonction d'âge et de sexe. On a calculé les fréquences absolues et relatives des phénotypes métriques (Tableaux 2–3).

## RÉSULTATS ET DISCUSSIONS

### 1. LE DÉVELOPPEMENT MÉTRIQUE CÉPHALO-FACIAL MOYEN DES ENFANTS SOURDS-MUETS (Tableau 1)

Les résultats concernant le développement céphalo-facial des enfants sourds-muets par rapport aux enfants normaux sont similaires chez les deux sexes.

La plupart des valeurs moyennes de la distance réduite « $z$ » sont négatives tant pour les dimensions que pour les indices (excepté la largeur faciale, la hauteur nasale et l'indice fronto-pariétal). Ces distances calculées sont en général insignifiantes. On peut constater que les plus grandes distances sont enregistrées pour la hauteur de la tête, la hauteur faciale et pour l'indice facial. On trouve une seule valeur moyenne de « $z$ » significative, pour l'indice facial des garçons, ce qui signifie chez eux une face plus basse.

Par conséquent, les résultats mettent en évidence, par rapport aux enfants normaux, un assez bon développement métrique céphalo-facial des enfants sourds-muets très peu déficitaire pour la hauteur de la tête et pour la conformation faciale.

Tableau 1

Valeurs moyennes de la variable réduite «z» concernant  
les caractères métriques céphalo-faciaux des enfants sourds-muets

| N° | Caractères  | Garçons (N=59) |       |        |          | Filles (N=106) |       |       |          | t     |
|----|-------------|----------------|-------|--------|----------|----------------|-------|-------|----------|-------|
|    |             | Min.           | Max.  | X      | $\sigma$ | Min.           | Max.  | X     | $\sigma$ |       |
| 1  | g-op        | -4,13          | +1,91 | -0,33  | 1,13     | -4,91          | +1,59 | -0,52 | 1,12     | 1,12  |
| 2  | eu-eu       | -3,33          | +2,64 | -0,50  | 1,15     | -3,06          | +3,88 | -0,51 | 1,17     | 0,06  |
| 3  | t-v         | -3,04          | +1,35 | -0,87  | 1,02     | -3,57          | +1,39 | -0,97 | 0,96     | 0,59  |
| 4  | ft-ft       | -2,25          | +1,97 | -0,19  | 0,96     | -2,69          | +1,82 | -0,20 | 0,90     | 0,06  |
| 5  | zy-zy       | -1,53          | +3,38 | +0,07  | 1,18     | -1,79          | +3,20 | +0,10 | 0,96     | -0,18 |
| 6  | go-go       | -2,75          | +2,22 | -0,28  | 1,15     | -2,90          | +2,51 | -0,35 | 1,04     | 0,41  |
| 7  | n-gn        | -2,67          | +1,40 | -0,87  | 0,87     | -3,13          | +2,61 | -0,80 | 1,00     | -0,50 |
| 8  | n-sn        | -2,65          | +2,96 | +0,04  | 1,09     | -2,09          | +2,85 | +0,07 | 1,08     | -0,18 |
| 9  | al-al       | -4,27          | +3,91 | -0,45  | 1,38     | -3,69          | +3,38 | -0,28 | 1,20     | -0,85 |
| 10 | eu-eu/g-op  | -3,37          | +3,17 | -0,14  | 1,01     | -1,87          | +4,00 | +0,02 | 1,19     | -0,94 |
| 11 | t-v/g-op    | -3,48          | +1,81 | -0,60  | 1,05     | -3,44          | +4,38 | -0,54 | 1,20     | -0,35 |
| 12 | t-v/eu-eu   | -3,03          | +2,11 | -0,42  | 0,96     | -3,32          | +2,57 | -0,54 | 1,04     | 0,71  |
| 13 | ft-ft/eu-eu | -1,54          | +2,66 | +0,21  | 0,93     | -2,11          | +2,87 | +0,24 | 1,04     | -0,21 |
| 14 | ft-ft/zy-zy | -2,40          | +1,27 | -0,37  | 0,87     | -2,12          | +1,24 | -0,34 | 0,76     | -0,12 |
| 15 | go-go/zy-zy | -3,21          | +3,35 | -0,39  | 1,26     | -2,19          | +2,75 | -0,47 | 0,97     | 0,40  |
| 16 | n-gn/zy-zy  | -5,42          | +1,25 | -1,11* | 1,28     | -3,46          | +1,87 | -0,85 | 1,05     | -1,30 |
| 17 | al-al/n-sn  | -1,98          | +1,99 | -0,32  | 0,93     | -2,90          | +2,93 | -0,23 | 1,15     | -0,64 |

\* Valeur statistiquement significative

## 2. LA VARIABILITÉ DES PHÉNOTYPES MÉTRIQUES CÉPHALO-FACIAUX CHEZ LES ENFANTS SOURDS-MUETS

(Tableaux 2 et 3)

Les phénotypes de la plupart des caractères métriques décrivent une courbe de variation dirigée vers les catégories «petite» et «très petite» tant chez les garçons que chez les filles. Les phénotypes de la largeur du front rapportée à la largeur de la tête ont des fréquences plus élevées pour les catégories «moyenne» et «grande».

Chez les garçons les fréquences des phénotypes «petit» et «très petit» dépassent 50% pour la largeur et la hauteur de la tête, la hauteur de la face, la largeur du nez, l'indice vertico-longitudinal et facial. De telles fréquences s'enregistrent chez les filles aussi pour la largeur mandibulaire, l'indice vertico-transversal et l'indice de la largeur mandibulaire (l'indice gonio-zygomatique). On remarque les plus élevées fréquences (62-75%) pour la hauteur de la tête, la hauteur faciale et l'indice facial chez les deux sexes.

Tableau 2

Variabilité des caractères métriques céphalo-faciaux chez les garçons sourds-muets (N=59)

| N° | Caractère   | Catégories de variabilité |       |        |       |         |       |        |       |             |       |
|----|-------------|---------------------------|-------|--------|-------|---------|-------|--------|-------|-------------|-------|
|    |             | Très petite               |       | Petite |       | Moyenne |       | Grande |       | Très grande |       |
|    |             | n                         | %     | n      | %     | n       | %     | n      | %     | n           | %     |
| 1  | g-op        | 7                         | 11,86 | 19     | 32,20 | 19      | 32,20 | 11     | 18,64 | 3           | 5,08  |
| 2  | eu-eu       | 10                        | 16,95 | 21     | 35,59 | 18      | 30,51 | 7      | 11,86 | 3           | 5,08  |
| 3  | t-v         | 14                        | 23,73 | 23     | 38,98 | 16      | 27,12 | 6      | 10,17 | —           | —     |
| 4  | ft-ft       | 3                         | 5,08  | 19     | 32,20 | 25      | 42,37 | 10     | 16,95 | 2           | 3,39  |
| 5  | zy-zy       | 3                         | 5,08  | 19     | 32,20 | 18      | 30,51 | 12     | 20,34 | 7           | 11,86 |
| 6  | go-go       | 12                        | 20,34 | 15     | 25,42 | 17      | 28,81 | 11     | 18,64 | 4           | 6,78  |
| 7  | n-gn        | 14                        | 23,73 | 30     | 50,85 | 11      | 18,64 | 4      | 6,78  | —           | —     |
| 8  | n-sn        | 5                         | 8,47  | 15     | 25,42 | 23      | 38,98 | 11     | 18,64 | 5           | 8,47  |
| 9  | al-al       | 9                         | 15,25 | 21     | 35,59 | 18      | 30,51 | 8      | 13,56 | 3           | 5,08  |
| 10 | eu-eu/g-op  | 3                         | 5,08  | 21     | 35,59 | 20      | 33,90 | 13     | 22,03 | 2           | 3,39  |
| 11 | t-v/g-op    | 15                        | 25,42 | 15     | 25,42 | 20      | 33,90 | 7      | 11,86 | 2           | 3,39  |
| 12 | t-v/eu-eu   | 9                         | 15,25 | 17     | 28,81 | 22      | 37,29 | 10     | 16,95 | 1           | 1,69  |
| 13 | ft-ft/eu-eu | 2                         | 3,39  | 11     | 18,64 | 25      | 42,37 | 18     | 30,51 | 3           | 5,08  |
| 14 | ft-ft/zy-zy | 7                         | 11,86 | 17     | 28,81 | 24      | 40,68 | 11     | 18,64 | —           | —     |
| 15 | go-go/zy-zy | 13                        | 22,03 | 13     | 22,03 | 21      | 35,59 | 9      | 15,25 | 3           | 5,08  |
| 16 | n-gn/zy-zy  | 26                        | 44,07 | 13     | 22,03 | 16      | 27,12 | 4      | 6,78  | —           | —     |
| 17 | al-al/n-sn  | 7                         | 11,86 | 20     | 33,90 | 20      | 33,90 | 10     | 16,95 | 2           | 3,39  |

Tableau 3

Variabilité des caractères métriques céphalo-faciaux chez les filles sourdes-muets (N=106)

| N° | Caractère   | Catégories de variabilité |       |        |       |         |       |        |       |             |       |
|----|-------------|---------------------------|-------|--------|-------|---------|-------|--------|-------|-------------|-------|
|    |             | Très petite               |       | Petite |       | Moyenne |       | Grande |       | Très grande |       |
|    |             | n                         | %     | n      | %     | n       | %     | n      | %     | n           | %     |
| 1  | g-op        | 17                        | 16,04 | 33     | 31,13 | 38      | 35,85 | 16     | 15,09 | 2           | 1,89  |
| 2  | eu-eu       | 21                        | 19,81 | 32     | 30,19 | 39      | 36,79 | 11     | 10,38 | 3           | 2,83  |
| 3  | t-v         | 28                        | 26,42 | 46     | 43,40 | 26      | 24,53 | 6      | 5,66  | —           | —     |
| 4  | ft-ft       | 5                         | 4,72  | 32     | 30,19 | 50      | 47,17 | 15     | 14,15 | 4           | 3,77  |
| 5  | zy-zy       | 3                         | 2,83  | 27     | 25,47 | 46      | 43,40 | 23     | 21,70 | 7           | 6,60  |
| 6  | go-go       | 8                         | 7,55  | 45     | 42,45 | 30      | 28,30 | 19     | 17,92 | 4           | 3,77  |
| 7  | n-gn        | 24                        | 22,64 | 43     | 40,57 | 30      | 28,30 | 7      | 6,60  | 2           | 1,89  |
| 8  | n-sn        | 6                         | 5,66  | 33     | 31,13 | 33      | 31,13 | 23     | 21,70 | 11          | 10,38 |
| 9  | al-al       | 32                        | 30,19 | 25     | 23,58 | 32      | 30,19 | 14     | 13,21 | 3           | 2,83  |
| 10 | eu-eu/g-op  | 7                         | 6,60  | 29     | 27,36 | 39      | 36,79 | 21     | 19,81 | 10          | 9,43  |
| 11 | t-v/g-op    | 17                        | 16,04 | 39     | 36,79 | 33      | 31,13 | 12     | 11,32 | 5           | 4,72  |
| 12 | t-v/eu-eu   | 21                        | 19,81 | 40     | 37,74 | 27      | 25,47 | 16     | 15,09 | 2           | 1,89  |
| 13 | ft-ft/eu-eu | 5                         | 4,72  | 22     | 20,75 | 37      | 34,91 | 30     | 28,30 | 12          | 11,32 |
| 14 | ft-ft/zy-zy | 7                         | 6,60  | 36     | 33,96 | 46      | 43,40 | 17     | 16,04 | —           | —     |
| 15 | go-go/zy-zy | 18                        | 16,98 | 35     | 33,02 | 38      | 35,85 | 13     | 12,26 | 2           | 1,89  |
| 16 | n-gn/zy-zy  | 26                        | 24,53 | 42     | 39,62 | 29      | 27,36 | 6      | 5,66  | 3           | 2,83  |
| 17 | al-al/n-sn  | 13                        | 12,26 | 34     | 32,08 | 30      | 28,30 | 25     | 23,58 | 4           | 3,77  |

## CONCLUSIONS

Pour estimer la normalité du développement métrique céphalo-facial des enfants écoliers sourds-muets on a utilisé la distance réduite «z» en comparant les phénotypes métriques des enfants sourds-muets avec les valeurs moyennes des enfants normaux selon l'âge et le sexe.

Les valeurs moyennes «z» et la variabilité individuelle des phénotypes métriques mettent en évidence un léger retard du développement des enfants sourds-muets surtout pour la hauteur de la tête, la hauteur morphologique de la face et l'indice facial. Par ce dernier caractère les garçons sourds-muets s'éloignent significativement des enfants normaux. Les courbes de variation des phénotypes sont orientées vers les catégories «petite» et «très petite» tant chez les garçons que chez les filles, excepté celle de l'indice fronto-pariétal qui tend vers la catégorie «grande». Un développement plus déficitaire mais insignifiant s'enregistre chez les deux sexes pour la hauteur de la tête et la conformation faciale.

On constate peu de différences sexuelles. Chez les filles par rapport aux garçons on trouve aussi des fréquences plus élevées (plus de 50%) pour la largeur et l'indice mandibulaire et pour l'indice vertico-transversal dans la catégorie «petite».

Malgré les conditions favorables de vie et d'enseignement assurées par cette école spéciale, il y a certains facteurs qui influencent probablement le développement physique un peu plus déficitaire de ces enfants (facteurs familiaux, sociaux, médicaux, etc.).

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# LA STRUCTURE DERMATOGLYPHIQUE DES POPULATIONS DE TRANSYLVANIE

CORNELIU VULPE, ELEONORA LUCA

**Dermatoglyphic structure of the populations from Transylvania.** The study of the population samples described in this paper will contribute to the making up of a more complete dermatoglyphic picture of the populations from Transylvania. Some relevant aspects of the digital dermatoglyphs are analysed from both palmar and plantar anatomical regions. Our research endeavour refers to the populations of 27 rural communities summing up a sample of 6031 subjects of both sexes. The majority of the data collected for this study are extracted from our previous papers, but we have also specified the data collected by other authors that have done research on populations from Transylvania. The conclusions of the present paper will be included in a chapter of the "Anthropological Atlas of Transylvania".

Des études dermatoglyphiques effectuées de village en village ont été entreprises par les chercheurs H. Dumitrescu (3), Marta Ciovârname Dumitrescu (6), Ana Țarcă (10) et par nous-mêmes (12). La répartition des dessins papillaires par départements a été signalée par C. Țurui dans son travail de synthèse «La dermatoglyphologie» (11).

Dans la plupart des cas les données exposées dans le présent travail proviennent des matériels publiés par nous le long des années mais aussi des matériels d'archives restés bruts à cause de différents motifs et que nous avons sortis à la lumière à cette occasion. Nous présenterons ici quelques aspects dermatoglyphiques plus significatifs concernant un nombre de 27 habitats situés dans diverses zones transylvaines. Toutes les données ressorties de l'étude des 6031 sujets des deux sexes corroborées aussi par celles de C. Țurui compléteront le tableau dermatoglyphique de la population de Transylvanie et en même temps elles constitueront un chapitre compris dans «L'Atlas anthropologique de la Transylvanie».

## LES DERMATOGLYPHES DIGITAUX

Par l'étude différentielle de chaque échantillon, les dermatoglyphes digitaux (A. B. T.) ont été appréciés selon le sexe, la main et aussi selon la position de chaque doigt

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du sujet. Pour comparer les habitats entre eux dans une synthèse nous avons fait seulement une estimation globale des trois types de dessin digital en considérant l'échantillon entier d'une localité indépendamment de sexe. Les deux sexes sont représentés approximativement en proportion égale.

Conformément à la répartition de ces trois types de dessin digital selon l'habitat, on peut observer que les arcs ont des limites de variabilité plus restreintes (3–8%) par rapport aux boucles (60–70%) et les tourbillons (26–33%). À noter qu'entre ces limites s'inscrivent les fréquences le plus souvent trouvées, mais nous n'éluderons pas le fait qu'au-dessous ou au-dessus de ces limites nous trouverons certaines fréquences minimales ou maximales. Ainsi, la fréquence plus réduite du nombre d'arcs se trouve à Peștera (3,2%) et la plus élevée à Moeciu de Sus (8,9%). Les boucles, qui ont la fréquence la plus élevée par rapport aux autres dessins digitaux, présentent une valeur minimale de 54,6% à Sadu et une valeur maximale de 73,0% à Alun. Par contre, les tourbillons ont un minimum de 22,4% à Moeciu de Sus et un maximum de 40,8% à Sadu.

On peut synthétiser les aspects présentés ci-dessus de la manière suivante:

|                         | <u>A</u> |               | <u>B</u> |      | <u>I</u> |               |
|-------------------------|----------|---------------|----------|------|----------|---------------|
| Valeur minimale:        | 3,2%     | Peștera       | 54,6%    | Sadu | 22,4%    | Moeciu de Sus |
| Valeur maximale:        | 8,9%     | Moeciu de Sus | 73,0%    | Alun | 40,8%    | Sadu          |
| Limites de variabilité: | 3–8%     |               | 60–70%   |      | 26–33%   |               |
| Valeur moyenne:         | 6,0%     |               | 62,8%    |      | 31,2%    |               |

À noter que les valeurs moyennes présentées ci-dessus sont valables pour la totalité de l'échantillon (6031 sujets) par l'addition des 27 échantillons (Tableau 1).

Conformément au schéma, on peut observer aussi que la moyenne des arcs est placée approximativement au centre de l'échelle de variation, que les boucles s'approchent de la limite inférieure et les tourbillons ont la tendance de rapprochement de la limite supérieure. Cette tendance de diminution du nombre des boucles et d'augmentation du nombre des tourbillons est en concordance avec les opinions de certains auteurs que les fréquences des boucles diminuent tandis que celles des arcs augmentent en avançant du nord et l'ouest de l'Europe vers le sud et l'est du continent.

### LES DERMATOGLYPHES PALMAIRES

Pour établir le type de dessin palmaire 4988 sujets des deux sexes ont été enquêtés. Les sujets proviennent de 21 habitats ruraux situés dans différentes zones de la Transylvanie. Quoique l'échantillon soit peu nombreux par rapport à l'échantillon de l'étude des dermatoglyphes digitaux, nous considérons que les données fournies par ce lot sont suffisantes pour réaliser un tableau d'ensemble de la fréquence des dessins papillaires palmaires (Tableau 2, Fig. 1).

Tableau 1  
Dermatoglyphes digitaux

| Localité<br>Auteurs* | A    |     | L     |      | V     |      | Nombre de<br>doigts |
|----------------------|------|-----|-------|------|-------|------|---------------------|
|                      | n    | %   | n     | %    | n     | %    |                     |
| Clopotiva (1,2)      | 189  | 7,6 | 1624  | 65,5 | 667   | 26,9 | 2480                |
| Alun (1,2)           | 49   | 3,7 | 964   | 73,0 | 307   | 23,3 | 1320                |
| Bătrâna (2)          | 167  | 4,1 | 2506  | 61,2 | 1425  | 34,7 | 4098                |
| Nucșoara (2)         | 364  | 7,1 | 3129  | 61,3 | 1615  | 31,6 | 5108                |
| Câmpu lui Neag (2)   | 97   | 4,8 | 1298  | 63,8 | 639   | 31,4 | 2034                |
| Brad (6)             | 177  | 6,8 | 1556  | 59,4 | 887   | 33,8 | 2620                |
| Blăjeni (3)          | 139  | 5,2 | 1600  | 59,7 | 941   | 35,1 | 2680                |
| Boșorod (3)          | 170  | 5,8 | 1959  | 66,6 | 811   | 27,6 | 2940                |
| Gurasada (3)         | 143  | 5,8 | 1555  | 62,9 | 772   | 31,3 | 2470                |
| Densuș (3)           | 128  | 5,0 | 1766  | 68,4 | 686   | 26,6 | 2580                |
| Gura Râului (3)      | 120  | 5,7 | 1344  | 64,6 | 616   | 29,6 | 2080                |
| Rășinari (3)         | 255  | 6,4 | 2418  | 60,3 | 1337  | 33,3 | 4010                |
| Sadu (3)             | 75   | 4,6 | 895   | 54,6 | 670   | 40,8 | 1640                |
| Drăguș (3)           | 125  | 7,9 | 1028  | 65,5 | 417   | 26,6 | 1570                |
| Șimon (3)            | 155  | 5,5 | 1726  | 61,2 | 939   | 33,3 | 2820                |
| Moeci de Jos (3)     | 75   | 3,9 | 1273  | 65,6 | 592   | 30,5 | 1940                |
| Fundata (3)          | 90   | 4,6 | 1277  | 65,5 | 583   | 29,9 | 1950                |
| Șirnea (3)           | 49   | 3,4 | 913   | 63,4 | 478   | 33,2 | 1440                |
| Moeci de Sus (3,4)   | 193  | 8,9 | 1475  | 68,6 | 482   | 22,4 | 2150                |
| Sohodol (3)          | 86   | 4,0 | 1454  | 67,0 | 630   | 29,0 | 2170                |
| Măgura (3)           | 76   | 6,2 | 856   | 69,6 | 298   | 24,2 | 1230                |
| Peștera (3)          | 34   | 3,2 | 710   | 67,0 | 316   | 29,8 | 1060                |
| Valea Marei** (5)    | 649  | 8,2 | 4540  | 57,3 | 2731  | 34,5 | 7920                |
| Total                | 3605 | 6,0 | 37866 | 62,8 | 18839 | 31,2 | 60310               |

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\*\* Localités recherchées: Giulești, Mara, Hârnicești, Desești, Sat Șugatag.

Conformément aux matériels fournis par la littérature et aussi à ceux obtenus par notre enquête, il résulte que les dermatoglyphes situés dans les cinq zones palmaires (hypothénar, thénar + I, espaces interdigitaux II, III, IV) présentent des fréquences qui s'inscrivent entre les limites de variabilité suivantes:

|                           | <u>H</u> (%)     | <u>I+I</u> (%) | <u>II</u> (%) | <u>III</u> (%) | <u>IV</u> (%)    |
|---------------------------|------------------|----------------|---------------|----------------|------------------|
| Valeurs minimales:        | 23,6-Gura Râului | 10,0-Brad      | 0,8-Măgura    | 29,3-Densuș    | 43,3-Gura Râului |
| Valeurs maximales:        | 44,0-Șimon       | 25,1-Nucșoara  | 10,4-Peștera  | 50,9-Blăjeni   | 63,4-Blăjeni     |
| Valeurs moyennes:         | 34,7             | 15,5           | 3,6           | 40,1           | 52,9             |
| Fréquences prédominantes: | 29-40            | 10-20          | 2-5           | 34-47          | 46-58            |



Tableau 2

## Répartition des dermatoglyphes palmaires

| Localité<br><br>Auteurs* | Régions    |      |            |      | Espaces interdigitaux |      |      |      |      |      | Nombre de<br>mains |
|--------------------------|------------|------|------------|------|-----------------------|------|------|------|------|------|--------------------|
|                          | Hypothenar |      | Thénar + I |      | II                    |      | III  |      | IV   |      |                    |
|                          | n          | %    | n          | %    | n                     | %    | n    | %    | n    | %    |                    |
| Alun (1, 2)              | 77         | 33,2 | 38         | 16,4 | 6                     | 2,6  | 105  | 45,3 | 114  | 49,1 | 232                |
| Bătrâna (2)              | 296        | 35,4 | 123        | 14,7 | 31                    | 3,7  | 349  | 41,8 | 386  | 46,2 | 836                |
| Nucșoara (2)             | 253        | 24,7 | 257        | 25,1 | 51                    | 5,0  | 489  | 47,8 | 535  | 52,2 | 1024               |
| Câmpu lui Neag (2)       | 137        | 33,6 | 92         | 22,6 | 18                    | 4,4  | 157  | 38,5 | 221  | 54,2 | 408                |
| Brad (5)                 | 198        | 37,8 | 55         | 10,5 | 18                    | 3,4  | 258  | 49,2 | 288  | 55,0 | 524                |
| Blăjeni (3)              | 213        | 39,2 | 95         | 17,4 | 46                    | 8,5  | 277  | 50,9 | 345  | 63,4 | 544                |
| Boșorod (3)              | 254        | 43,2 | 64         | 10,8 | 13                    | 2,2  | 201  | 34,2 | 316  | 53,7 | 588                |
| Gurasada (3)             | 159        | 32,2 | 55         | 11,1 | 16                    | 3,2  | 186  | 37,6 | 286  | 57,8 | 494                |
| Densuș (3)               | 186        | 36,0 | 59         | 11,4 | 13                    | 2,5  | 152  | 29,3 | 278  | 53,6 | 518                |
| Gura Râului (3)          | 98         | 23,6 | 52         | 12,5 | 17                    | 4,1  | 187  | 44,9 | 180  | 43,3 | 416                |
| Rășinari (3)             | 252        | 31,4 | 88         | 10,9 | 19                    | 2,4  | 299  | 37,3 | 379  | 47,2 | 802                |
| Sadu (3)                 | 103        | 31,2 | 61         | 18,5 | 15                    | 4,5  | 148  | 44,8 | 174  | 52,7 | 330                |
| Șimon (3)                | 250        | 44,0 | 81         | 14,2 | 18                    | 3,1  | 196  | 34,5 | 349  | 61,4 | 568                |
| Moeciu de Jos (3)        | 134        | 34,3 | 56         | 14,3 | 12                    | 3,0  | 147  | 37,6 | 214  | 54,8 | 390                |
| Fundata (3)              | 151        | 41,9 | 53         | 14,7 | 11                    | 3,0  | 131  | 36,4 | 178  | 49,4 | 360                |
| Șirnea (3)               | 105        | 36,0 | 36         | 12,3 | 9                     | 3,0  | 91   | 31,2 | 165  | 56,5 | 292                |
| Moeciu de Sus (3, 4)     | 175        | 40,1 | 80         | 18,3 | 9                     | 2,1  | 173  | 39,7 | 216  | 49,5 | 436                |
| Sohodol (3)              | 165        | 38,0 | 61         | 14,1 | 4                     | 0,9  | 150  | 34,6 | 247  | 56,9 | 434                |
| Măgura (3)               | 100        | 39,4 | 51         | 20,1 | 2                     | 0,8  | 80   | 31,5 | 131  | 51,6 | 254                |
| Peștera (3)              | 76         | 35,8 | 31         | 14,6 | 22                    | 10,4 | 78   | 36,8 | 133  | 62,7 | 212                |
| Drăguș (3)               | 84         | 26,7 | 54         | 17,2 | 11                    | 3,5  | 147  | 46,8 | 147  | 46,8 | 314                |
| Total                    | 3466       | 34,7 | 1542       | 15,5 | 361                   | 3,6  | 4001 | 40,1 | 5282 | 52,9 | 9976               |

\* Auteurs: 1. H. Dumitrescu, 2. Marta Ciovârname Dumitrescu, 3. C. Vulpe, 4. M. F. Pospișil, 5. Dana Magdalena Tacu.

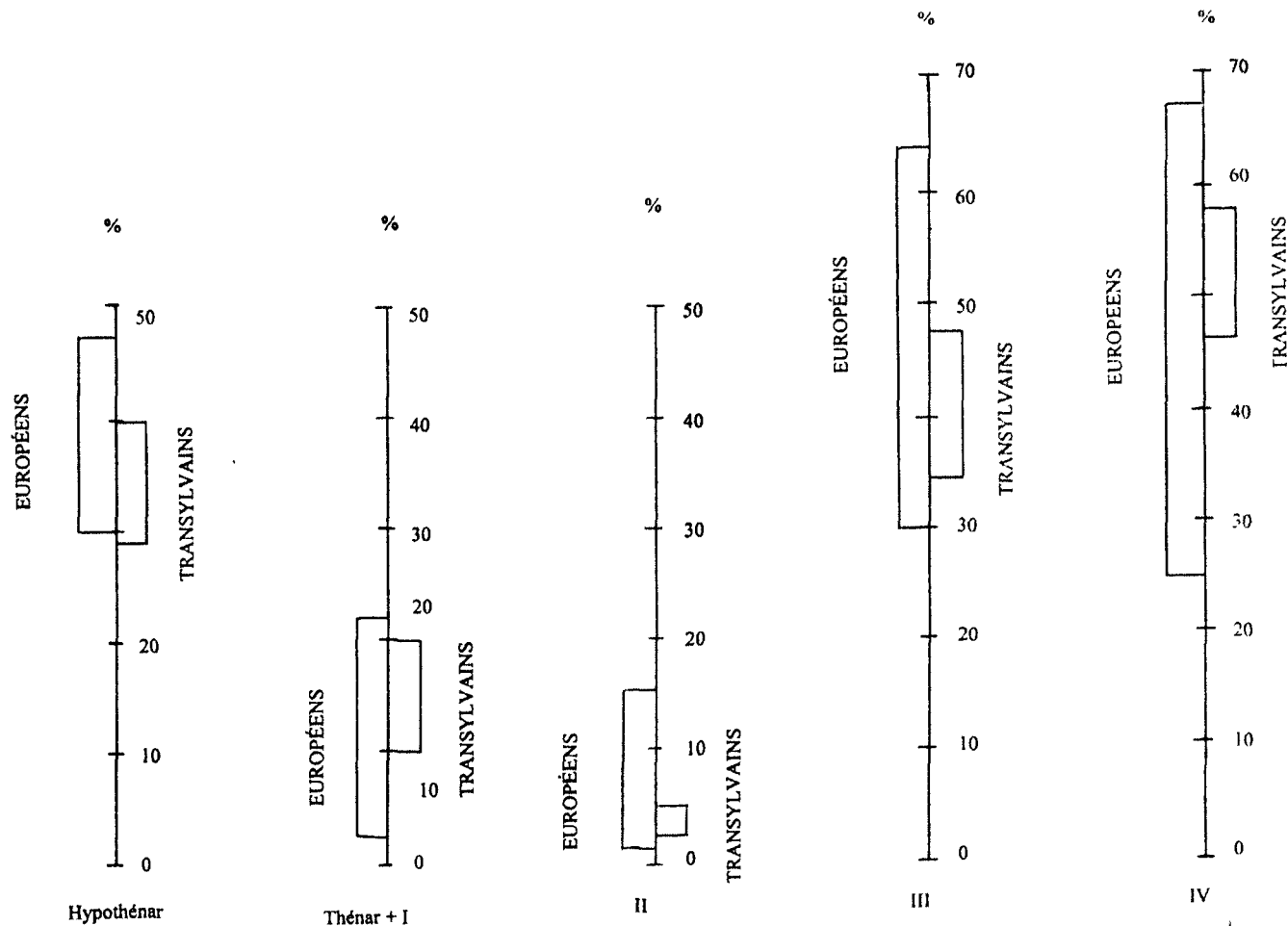


Fig. 1. – Représentation graphique de la variabilité dermatoglyphique palmaire (les limites de variabilité chez les européens d'après J. Pons).

Tant par les valeurs moyennes que par les fréquences prédominantes des dessins palmaires on constate que la population de Transylvanie s'inscrit entre les limites de variabilité qui caractérise le continent européen (Fig. 1).

### LES DERMATOGLYPHES PLANTAIRES

La recherche des dermatoglyphes plantaires a été portée sur un échantillon de 4378 sujets des deux sexes. On a utilisé dans ce but le système de notation de Wichmann.

Le nombre des habitats s'élève à 18 villages, donc moins par rapport à l'étude des dermatoglyphes palmaires. Cette situation s'explique par la technique de prélèvement un peu plus difficile et aussi par la réceptivité plus réduite des sujets devant ce type d'investigation.

Tableau 3

Répartition des dermatoglyphes plantaires

| Localité<br>Auteurs* | O            | D            | P          | T          | F        | W           | Nombre de<br>régions |
|----------------------|--------------|--------------|------------|------------|----------|-------------|----------------------|
| Alun (1. 2)          | 516<br>58,0  | 230<br>25,8  | 34<br>3,8  | 30<br>3,4  | —<br>—   | 80<br>9,0   | 890                  |
| Bătrâna (2)          | 2415<br>57,9 | 1063<br>25,5 | 207<br>5,0 | 113<br>2,7 | —<br>—   | 372<br>8,9  | 4170                 |
| Nucșoara (2)         | 2920<br>56,8 | 1379<br>26,8 | 272<br>5,3 | 98<br>1,9  | —<br>—   | 468<br>9,1  | 5137                 |
| Câmpu lui Neag (2)   | 1218<br>59,4 | 422<br>20,6  | 105<br>5,1 | 108<br>5,3 | —<br>—   | 197<br>9,6  | 2050                 |
| Brad (4)             | 1457<br>55,4 | 656<br>24,9  | 165<br>6,3 | 85<br>3,2  | 7<br>0,3 | 260<br>9,9  | 2630                 |
| Blăjeni (3)          | 1499<br>55,5 | 701<br>25,9  | 156<br>5,8 | 71<br>2,6  | 5<br>0,2 | 268<br>9,9  | 2700                 |
| Boșorod (3)          | 1711<br>57,0 | 793<br>26,4  | 176<br>5,9 | 93<br>3,1  | 1<br>0,1 | 226<br>7,5  | 3000                 |
| Gurasada (3)         | 1313<br>53,4 | 663<br>26,9  | 161<br>6,5 | 97<br>3,9  | —<br>—   | 226<br>9,2  | 2460                 |
| Densuș (3)           | 1593<br>58,8 | 670<br>24,7  | 139<br>5,1 | 68<br>2,5  | —<br>—   | 240<br>8,9  | 2710                 |
| Gura Râului (3)      | 1091<br>52,7 | 492<br>23,8  | 144<br>7,0 | 92<br>4,4  | 6<br>0,3 | 245<br>11,8 | 2070                 |
| Sadu (3)             | 2091<br>55,3 | 1009<br>26,7 | 216<br>5,7 | 142<br>3,8 | 4<br>0,1 | 318<br>8,4  | 3780                 |
| Drăguș (3)           | 905<br>56,9  | 413<br>26,0  | 96<br>6,0  | 49<br>3,1  | 5<br>0,3 | 122<br>7,7  | 1590                 |
| Șimon (3)            | 1604<br>58,3 | 584<br>21,2  | 190<br>6,9 | 113<br>4,1 | 3<br>0,1 | 256<br>9,3  | 2750                 |

|                   |               |               |             |             |           |             |       |
|-------------------|---------------|---------------|-------------|-------------|-----------|-------------|-------|
| Moeciu de Jos (3) | 1093<br>58,1  | 431<br>22,9   | 107<br>5,7  | 92<br>4,9   | –<br>–    | 157<br>8,3  | 1880  |
| Șirnea (3)        | 826<br>57,0   | 361<br>24,9   | 78<br>5,4   | 76<br>5,2   | –<br>–    | 109<br>7,5  | 1450  |
| Sohodol (3)       | 1270<br>58,0  | 533<br>24,3   | 107<br>4,9  | 94<br>4,3   | 1<br>0,1  | 185<br>8,4  | 2190  |
| Măgura (3)        | 717<br>56,5   | 286<br>22,5   | 84<br>6,6   | 50<br>3,9   | 2<br>0,2  | 131<br>10,3 | 1270  |
| Peștera (3)       | 594<br>56,0   | 253<br>23,9   | 63<br>5,9   | 59<br>5,6   | –<br>–    | 91<br>8,6   | 1060  |
| Total             | 24833<br>56,7 | 10939<br>24,9 | 2500<br>5,7 | 1530<br>3,5 | 34<br>0,2 | 3951<br>9,0 | 43787 |

\* Auteurs: 1. H. Dumitrescu, 2. Marta Ciovârname Dumitrescu, 3. C. Vulpe, 5. Dana Magdalena Tacu.

Comme on observe dans le Tableau 3, le plus souvent apparaissent les champs ouverts (structures en forme d'arc) notés avec 0, suivis à distance par la totalité des structures en forme de boucle (D, P, T, F) et puis, dans une proportion plus réduite, par les structures tourbillonnaires (W). En mettant les fréquences des types des dessins plantaires en ordre décroissante, on obtient cette suite: 0>D>P>T>F. Le dernier type de dessin de la suite – le dessin fibulaire (F) – a une fréquence négligeable vu que ce dessin est rarement trouvé (0,1–0,3%) ou il manque pratiquement.

Sur l'ensemble de l'échantillon la distribution des dermatoglyphes plantaires se présentent ainsi: 0 = 56,7%; D = 24,9%; P = 5,7%; T = 3,5%; F = 0,2%; W = 9,0%.

L'analyse des données enregistrées chez la population de Transylvanie démontre que les habitants de cette province historique se placent par la fréquence des boucles et des tourbillons, conformément aux données de certains auteurs, dans la zone d'une plus faible intensité des boucles et une plus forte intensité des tourbillons – situation caractéristique pour le Centre et le Sud-Est de l'Europe.

L'encadrement de la population roumaine de Transylvanie entre les limites de variabilité caractéristiques au continent européen est soutenu aussi par le mode de répartition des dermatoglyphes palmaires comme on voit très clairement dans la Figure 1.

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# POINT DE VUE GÉNÉTIQUE SUR LA CLASSIFICATION DE TYPE «CLUSTER» CHEZ LA POPULATION DE TRANSYLVANIE – ROUMANIE

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**Genetic point of view on the “cluster”-type classification in the population of Transylvania – Romania.** 69 male samples, coming from the same number of human communities from the Romanian province of Transylvania, were classified in clusters by means of the Ward method. Having considered the anthropometric values of nine cephalic-facial features and height, 4 taxonomic groups were determined, each of them differing by the number of its associated villages and by the specific typological particularities. The most important findings point out a clear distinction between the populations characterized by a broad but average low cephalic calotte and a well-developed facial massif and the populations featured by a narrower but obviously high calotte and a thinner facial massif.

Dans une étude intitulée «Une rétrospective chronologique sur les recherches avec finalité typologique chez les populations de Transylvanie» (Vlădescu, Glavce, 2001), nous avons rassemblé le plus largement possible les publications dans lesquelles nous trouvons des informations variées sur la structure bioanthropologique des populations contemporaines qui vivent dans l'espace géographique de cette grande province roumaine.

Nous nous rapportons à cette référence, vu qu'une grande quantité de données anthropométriques y concentrées, études d'auteurs ou monographies, ont été incluses, bien sûr dans une autre conception, dans la synthèse qui constitue «l'Atlas Anthropologique de la Transylvanie».

Nous soulignons que le volume est achevé et prêt à être publié. Il s'agit d'une grande étude contenant des données multidisciplinaires et interdisciplinaires (démographie, anthroponymie, paléanthropologie) ayant même un caractère monographique, si l'on tient compte des commentaires détaillés du texte, qui accompagnent le matériel illustratif représenté par des tableaux et figures, toutes différentes du point de vue de la conception.

Vue que l'espace ne nous permet pas de présenter tout l'appareil statistique du chapitre «l'Analyse de la structure bioanthropologique des populations», le plus élargi du volume, dans cette étude nous nous référons seulement à un aspect, à savoir

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celui portant sur la classification de type «cluster» chez les échantillons masculins de 69 communautés humaines qui ont été étudiées.

Le triage des sujets a été réalisé par la méthode Ward (Anderberg, 1973) parce que, si dans une première étape de traitement statistique nous avons opéré avec des moyennes pondérées, déviations standard, coefficients de variabilité, tests de signification, les données étaient en même temps susceptibles d'être soumises à une analyse statistique multivariée. Et cela parce que dans un atlas dans lequel les communautés de reproduction sont elles-mêmes (tout comme les sujets) des unités d'analyse, les aspects d'intervariabilité qu'elles expriment sont tout aussi importants.

Notre intérêt pour cette méthodologie a été tout aussi grand si on tient compte que Howells, se référant aux possibilités d'utilisation de l'analyse statistique multivariée, en définissait les moyens efficaces et fiables dans l'étude de l'information sur la variabilité inter- et intrapopulationnelle.

«Ceux-ci permettent la concentration de l'information dans un petit nombre de vecteurs. A partir de ceux-ci, on peut estimer les «distances» entre les populations et, à partir de là, établir des «arbres» ou des regroupements des différences interpopulationnelles [...] Ces méthodes ont le grand avantage d'être objectives, à l'inverse des groupements subjectifs ou raciaux établis dans le passé» (Howells, 1975).

## RÉSULTATS ET COMMENTAIRES

Étant donné que nous avons constamment travaillé dans nos recherches antérieures avec 4 types déterminés par la méthode du morphogramme taxonomique (Grințescu-Pop *et al.*, 1965) construit d'après les procédés statistiques classiques (Marten Saller, 1957) nous nous sommes proposé d'étudier maintenant le même nombre de groupes.

L'analyse est basée sur 10 variables anthropométriques (9 céphalo-faciales et la taille), provenant de 69 communautés humaines avec 6500 sujets de sexe masculin.

Dès le niveau le plus haut du dendrogramme masculin (Fig. 1) se sont ramifiés deux grands groupes populationnels. Nous allons les analyser en fonction du nombre de villages y associés.

Le plus répandu est le cluster Șoimi-Maieru. Il totalise 33 (48%) des villages dispersés du point de vue administratif en 10 départements (sur un total de 12 départements étudiés), soit pratiquement à peu près tout l'espace géographique de la province. C'est un cluster apparemment homogène jusqu'aux dernières ramifications de la classification, même si on peut supposer que des caractères provenant d'arbres généalogiques différant d'une communauté à l'une autre ont contribué à sa structure taxonomique.

Le cluster suivant, tout aussi grand, n'est plus tellement homogène. Dans le temps, et petit à petit, il s'est diversifié en trois variantes localisées sur la Fig. 1,

| Villages           | Départements              |
|--------------------|---------------------------|
| <u>Soimi</u>       | BH - +                    |
| Sănnicolau         | BH - +                    |
| Ursad              | BH - + - +                |
| Poșaga             | AB - + I                  |
| Sălciua            | AB - + I                  |
| Suplac             | BH - + + --- +            |
| Vadu Crișului      | BH - + I I                |
| Drăgus             | BV - + - + I              |
| Câmpu lui Neag     | HD - + I I                |
| Lunca              | AB - + I I                |
| Ocoliș             | AB - + I I                |
| Vidolm             | AB - + - + I              |
| Șirna              | AB - + I                  |
| Aghireșu           | CJ - + I                  |
| Crucea             | CJ - + I                  |
| Gilău              | CJ - + - - - + - - - +    |
| Călățele           | CJ - + I I                |
| Dăișoara           | BV - + I I                |
| Ibănești           | MS - + I I                |
| Rupea              | BV - + - + I I            |
| Dumitra            | AB - + I I + -----+-----+ |
| Rontâu             | BH - + + - - - + I        |
| Șugag              | AB - + I I                |
| Săliște            | SB - - - + I              |
| Șincai             | MS - + I                  |
| Morești            | MS - + - + I              |
| Frata              | CJ - + + - - - - - +      |
| Daneș              | MS - + I                  |
| Ceanu Mare         | CJ - + - +                |
| Cricău             | AB - +                    |
| Lăpuș              | SM - +                    |
| Mocod              | BN - +                    |
| <u>Maieru</u>      | BN - +                    |
| Medieșu Aurit      | SM - +                    |
| Giorocuța          | SM - +                    |
| Dindești           | SM - + -----+-----+       |
| Buciumi            | SJ - + I                  |
| Marca              | SJ - + I                  |
| <u>Letca</u>       | SJ - + I                  |
| Târpiu             | BN - + I                  |
| Rebrișoara         | BN - + I                  |
| Ardan              | BN - + I                  |
| Clopotiva          | HD - + - - - + I          |
| Dumitra            | BN - + I + -----+-----+   |
| Vlădeni            | BV - + I I                |
| Remetea Chioarului | SM - + + - - - - - + I    |
| Săcele             | BV - + I I I              |
| Vama Buzăului      | BV - + - + I I I          |
| Șirnea             | BV - + + - + I I          |
| Luna               | CJ - + I I I              |
| Viișoara           | CJ - + - + I I            |
| Șimon              | BV - + I I                |
| <u>Tilișca</u>     | SB - + + -----+-----+     |
| Rășinari           | SB - + I                  |
| Sadu               | SB - + I                  |
| Gura Râului        | SB - + - - - - + I        |
| Nucșoara           | HD - + I I                |
| Lunca Cernii       | HD - + I I                |
| Râu de Mori        | HD - + I I                |
| Osrov              | HD - + + - - - - - +      |
| Sarmizegetuza      | HD - + - + I              |
| Bătrâna            | HD - + I I                |
| Densuş             | HD - + I I                |
| Blăjeni            | HD - + + - - - +          |
| Jina               | SB - + I                  |
| Gura Sada          | HD - + - +                |
| Boşorod            | HD - + I                  |
| Poiana Sibiului    | SB - + - +                |
| Galda de Jos       | AB - +                    |



comme suit: **Răşinari-Galda de Jos** avec 16 villages (23%) situés dans la partie sud-ouest de la province; **Târbuiu-Tilişca** avec 14 villages (20,3%) dans un espace central avec orientation vers le nord mais aussi vers le sud; **Medieşu Aurit-Letca** avec 6 villages (8,7%) situés exclusivement au nord. Chez ces groupes la classification peut être détaillée jusqu'aux variantes locales si on tient compte que chaque association contient, à son tour, des sous-groupes avec un petit nombre de villages.

Pour l'instant on peut retenir que le premier cluster est homogène et a une grande pénétration géographique, tandis que le deuxième est plus hétérogène et les localisations des sous-groupes sont plus circonscrites.

Nous n'avons exposé jusqu'ici que des aspects rattachés à la classification. La place des types dans un modèle morphologique peut être déterminée seulement en fonction des particularités anthropométriques concrètes qui sont proches ou différentes.

Dans ce but, on a calculé les moyennes synthétiques de chaque caractère pour les villages de chaque cluster que nous avons concentrées dans le Tableau 1. À une première analyse, deux catégories de données produisent de l'effet. Les plus grandes valeurs sont celles du grand groupe avec 33 échantillons à deux exceptions près, g-op et t-v, fait important à retenir pour la caractérisation de la calotte céphalique. Les plus petites valeurs sont celles du petit groupe, avec 6 échantillons à une seule exception près, al-al. Évidemment les autres groupes connaissent une position intermédiaire.

En ce qui concerne les valeurs des 10 caractères, introduites dans l'analyse, on peut voir exactement leur grandeur seulement sur les morphogrammes de la Fig. 2, qui indiquent leur position sur les échelles de classification. Ces valeurs sont disposées en décalage sur trois espaces à la limite de la petite catégorie jusqu'au-delà du centre de la grande catégorie.

Si, à part cet aspect, on tient compte aussi des complexes associatifs, alors toute la variabilité peut être exprimée en ce qui concerne les segments dans deux formes pour la calotte, trois physionomies faciales et deux types de nez.

Pour chaque cluster la situation dans l'ensemble se constitue ainsi:

**Şoimi-Maieru** g-op < eu-eu > t-v < ft-ft; go-go = zy-zy < n-gn; al-al < n-sn.

Les populations associées dans cette zone ont donc la tête et le front larges, la face large et en même temps haute, le nez moyen large et haut. Comme on peut observer, les valeurs de la catégorie grande sont dominantes et quatre d'entre elles sont situées dans un plan horizontal de symétrie.

**Răşinari-Galda de Jos** g-op < eu-eu > t-v < ft-ft; go-go < zy-zy ≥ n-gn; al-al < n-sn.

Deux aspects sont à mettre en évidence chez ce cluster, comparativement au précédent: 1. la calotte qui se distingue par la hauteur et non pas par la largeur; 2. la face et le nez ayant des dimensions moyennes, même avec des tendances vers les petites valeurs pour le diamètre al-al.

Tableau 1

Les moyennes synthétiques des «clusters» dans la classification d'après la méthode Ward

|                  |          | G-OP   | EU-EU  | FT-FT  | ZY-ZY  | GO-GO  | N-GN   | N - SN | AL-AL | T-V    | V-SOL   |
|------------------|----------|--------|--------|--------|--------|--------|--------|--------|-------|--------|---------|
| Șoimi – Maieru   | X        | 184,62 | 159,06 | 111,87 | 144,83 | 111,93 | 126,36 | 57,45  | 35,58 | 124,09 | 1688,89 |
|                  | N        | 33     | 33     | 33     | 33     | 33     | 33     | 33     | 33    | 33     | 33      |
|                  | $\sigma$ | 2,11   | 1,9    | 2,13   | 1,81   | 2,49   | 1,83   | 1,92   | 0,89  | 1,87   | 18,27   |
| Rășinari – Galda | X        | 184,27 | 155,29 | 110,96 | 141,93 | 108,62 | 122,33 | 54,17  | 34,34 | 129,46 | 1667,86 |
|                  | N        | 16     | 16     | 16     | 16     | 16     | 16     | 16     | 16    | 16     | 16      |
|                  | $\sigma$ | 1,69   | 2,15   | 1,74   | 1,52   | 1,17   | 1,22   | 1,54   | 0,93  | 2,86   | 17,45   |
| Târpiu – Tilișca | X        | 185,15 | 156,30 | 108,52 | 142,66 | 107,64 | 125,95 | 56,00  | 35,27 | 125,05 | 1681,01 |
|                  | N        | 14     | 14     | 14     | 14     | 14     | 14     | 14     | 14    | 14     | 14      |
|                  | $\sigma$ | 2,52   | 1,91   | 1,31   | 1,45   | 1,89   | 2,40   | 1,59   | 0,73  | 1,71   | 10,09   |
| Medieșu – Letca  | X        | 177,04 | 152,78 | 107,55 | 137,23 | 105,26 | 120,85 | 52,87  | 36,28 | 124,13 | 1682,37 |
|                  | N        | 6      | 6      | 6      | 6      | 6      | 6      | 6      | 6     | 6      | 6       |
|                  | $\sigma$ | 1,29   | 1,65   | 1,26   | 1,38   | 0,95   | 0,79   | 0,97   | 0,74  | 0,82   | 16,43   |
| Total            | X        | 183,98 | 157,08 | 110,60 | 143,05 | 109,71 | 124,86 | 56,00  | 35,29 | 125,53 | 1681,85 |
|                  | N        | 69     | 69     | 69     | 69     | 69     | 69     | 69     | 69    | 69     | 69      |
|                  | $\sigma$ | 2,97   | 2,83   | 2,40   | 2,73   | 3,04   | 2,70   | 2,34   | 1,02  | 2,99   | 18,27   |

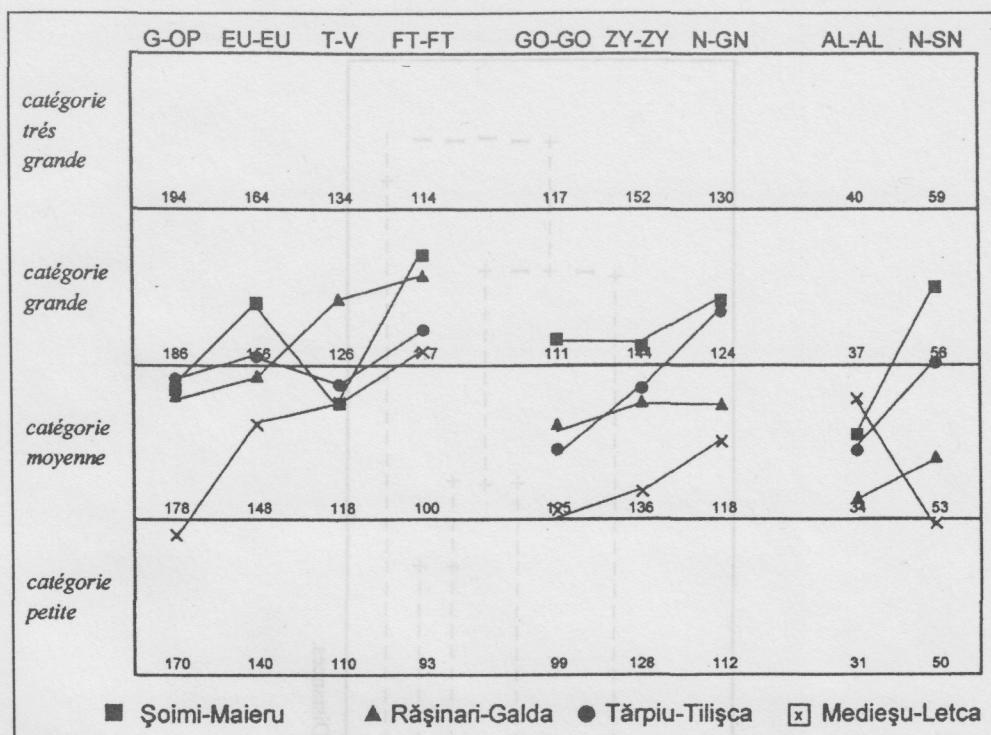


Fig. 2. – Morphogrammes taxonomiques.

Les deux agglomérations qui suivent, on peut les interpréter, si on tient compte de la forme des morphogrammes, comme deux variantes des deux précédents seulement en ce qui concerne la calotte.

Pour le groupe des populations Târpiu-Tilișca, la tête est caractérisée par des dimensions moyennes qui se trouvent à la limite moyen-grand et pour le groupe Medieșu Aurit-Letca les decalages, disposés d'une manière ascendante, sont grands mais orientés vers des valeurs plus basses, même jusqu'à la limite avec la catégorie petite pour g-op.

Du point de vue dimensionnel, les segments les plus variables sont la face et le nez, fait attendu si on tient compte que ceux-ci sont les premiers indices physionomiques auxquels on fait appel pour identifier une personne vivante. Donc nous pouvons dire que chez la population de l'intervalle Târpiu-Tilișca la face et le nez ont des largeurs moyennes, mais sont hautes et celles de l'intervalle Medieșu Aurit-Letca ont seulement des valeurs moyennes, même avec des tendances vers des petites valeurs comme c'est le cas du go-go et n-sn, rarement signalées chez nos populations.

Du point de vue schématique, les segments sont disposés ainsi: Târpiu-Tilișca g-op < eu-eu > t-v < ft-ft; go-go < zy-zy < n-gn; al-al < n-sn et Medieșu Aurit-Letca g-op < eu-eu < t-v < ft-ft; go-go < zy-zy < n-gn; al-al > n-sn.



L'utilisation du même modèle de classification sur les dimensions par lesquelles nous avons défini les aspects de variabilité anthropologique générale, a conduit à des conclusions importantes. Ici aussi on a extrait 4 groupes de dimensions. Deux en sont disposées en cycles en fonction du plan de symétrie dans lequel elles se sont développées. Les voici: eu-eu, zy-zy, go-go et ft-ft horizontales; n-gn, n-sn et g-op sagittales. Ce qui est intéressant, c'est la position dans une catégorie différente de la hauteur t-v (même si c'est un caractère vertical), d'une part, et l'association de la largeur al-al avec la taille, d'une autre part (Fig. 3).

Il s'agit donc d'un déterminisme génétique complexe, dans lequel les facteurs multiples posent leur empreinte spécifique sur la variabilité des populations étudiées. Par exemple, la hauteur t-v, par les indices vertico-longitudinal et vertico-transversal, sépare chez nos populations les variantes avec une tête en même temps brachycéphale et hypsicéphale de celles avec une tête hyper- ou ultrabrachycéphale mais aussi tapéinocéphale.

Finalement on peut parler de deux types anthropométriques fondamentaux, chacun ayant une double variante. L'une plus macrosomatisée avec une dispersion géographique plus large et une autre avec des valeurs plus petites et plus délimitée en espace. Dans la première catégorie il y a les clusters Șoimi-Maieru, respectivement Târlău-Tilișca, avec un total de 47 villages (68%) et en ce qui concerne le deuxième type, les clusters Rășinari-Galda de Jos, respectivement Medieșu Aurit-Letca, avec un total de 22 villages (32%).

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# INTERPOPULATIONAL VARIABILITY OF THE AGE INVOLUTION OF THE DYNAMOMETRIC FORCE IN SOME POPULATIONS FROM MOLDAVIA

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The authors study the interpopulational variability of the dynamometric force according to sex and age in a number of 1777 subjects (792 men and 985 women) from eight rural communities from the Central Moldavian Plateau. It can be seen that in the synthetic series the average values of the dynamometric force decrease with age, practically in the same rhythm in both sexes, until the age of 60, after which men keep better this physiometric parameter. Illustrative for this phenomenon is the women percentage as to the average men average, which is 62.76% in the 20–39 years phase, 62.86% in the 40–59 years period, and after the age of 60 this percentage decreases to 58.65%. The interpopulational variability of the average values of the dynamometric force is higher in women than in men. For the 20-59 period the amplitude of the interpopulational variability is of 4.45 Kg force ( $T = 4.7849$ ) in men and 8.62 Kgf ( $T = 14.7288$ ) in women. Regarding the masculine synthetic series, significantly superior values have the men from Răchiteni ( $T = 4.6098$ ). At the opposed pole, from the series with lower values only the men from Mircești touch the threshold of significance ( $T = 2.0266$ ). In women, compared with the synthetic series, significantly superior average have the series from Prăjești ( $T = 8.3401$ ) and Răchiteni ( $T = 5.8912$ ). At the opposite pole, with significantly lower values are the series from Fărăoani ( $T = 11.4509$ ) and Gherăești ( $T = 5.8912$ ).

## INTRODUCTION

Within the complex anthropological research concerning certain predominantly catholic population from Moldavia, several studies were made regarding the variability of some physiometric characteristics: blood pressure, vital capacity and dynamometric force. The present work deals exclusively with the variability of the dynamometric force according to age and sex for the whole population taken into study, addressing at the same time the interpopulational variability.

## MATERIALS AND METHODS

A number of 1777 subjects (792 men and 985 women) were taken into study. They belong to 8 rural communities from the counties of Neamț (Gherăești, Săbăoani), Bacău (Fărăoani, Prăjești) and Iași (Răchiteni, Mircești, Hălăucești and Butea).

The pressure force of the hand flexor muscles was determined using the DRP 90 dynamometer. For the precision of the results, after explaining the technique, each subject, after a preliminary test, repeated the test twice or three times (with breaks), the highest values being recorded.

The statistic testing of the data was made according to age and sex, both for real and relative values, for each community apart, after which, using the same criteria, the synthetic series were made for the whole of the population taken into study. The interpopulational variability was interpreted according to the significance tests, calculated for age intervals, for a better statistical safety.

## RESULTS AND DISCUSSIONS

The analysis of the data in Table 1 shows, as expected, a value superiority of the dynamometric force averages in males, compared with females, for all ages. At the same time, it is worth saying that in both sexes (synthetic series), the dynamometric force increases in the 30–39 years decade, compared with the 20–29 years decade. The phenomenon is stronger in men, both in absolute value (3.56%, meaning 2.38 Kg f) and in relative value (4.50%, meaning 1.18 i.u.). In women the increase is somewhat slighter, both for the absolute value (1.65%, representing 0.48 Kg f) and in the relative value (2.49%, representing only 0.45 i.u.). This phenomenon might be explained through the adaptation of the subjects in the 30–39 decade to the physical effort necessary both for agricultural labour and house keeping duties. Out of the 8 populations taken into study, this increase of the dynamometric force in the 30-39 years decade can be seen in four villages, in both sexes. Thus, among the male series, the most important increase can be found at Hălăucești (8.49% in absolute value, and 8.93% in relative value), followed by the series from Răchiteni (6.40% in absolute value and 7.14% in relative value), Fărăoani (4.01%, respectively 5.16%) and Butea (2.5%, respectively 2.11%). In the female series, on the first place comes the series from Butea (30.75% in absolute values and 25.56% in relative values), followed by the series from Răchiteni (12.28% and, respectively, 12.21%), Hălăucești (10.25% and, respectively, 12.18%) and Fărăoani (12.28% and, respectively, 12.21%). It is worth mentioning that the women from Butea belonging to the 20–29 years decade have a much smaller stature than those from the following three decades taken into study, fact which clearly influences in a negative way the average values of the absolute dynamometric force.

After the age of 40, in the synthetic series, the dynamometric force decreases with age, the phenomena being somewhat more visible in women. Among the series taken into study, exceptions are only the women from Butea and Răchiteni, which keep better their dynamometric force with the age increasing, compared with the men from the same communities.

Table 1

Average values of the dynamometric force in synthetic series according to age

|       | Dynamometer |       |          | Dyn./stat. | Dynamometer |       |          | Dyn./stat. |
|-------|-------------|-------|----------|------------|-------------|-------|----------|------------|
|       | N           | M     | $\delta$ | M          | N           | M     | $\delta$ | M          |
|       | Men         |       |          |            | Women       |       |          |            |
| 20–29 | 200         | 45.50 | 7.75     | 26.20      | 191         | 29.03 | 5.38     | 18.04      |
| 30–39 | 150         | 47.12 | 7.74     | 27.38      | 177         | 29.51 | 6.11     | 18.49      |
| 40–49 | 140         | 43.09 | 7.30     | 25.20      | 205         | 27.02 | 6.02     | 17.00      |
| 50–59 | 195         | 38.39 | 6.75     | 22.66      | 265         | 24.09 | 5.47     | 15.50      |
| 60–69 | 80          | 35.89 | 5.78     | 21.14      | 104         | 22.07 | 5.11     | 14.23      |
| 70–79 | 27          | 30.80 | 7.37     | 18.48      | 43          | 18.34 | 4.70     | 11.85      |
| 20–39 | 350         | 46.62 | 7.95     | 26.88      | 368         | 29.26 | 5.97     | 18.26      |
| 40–59 | 335         | 40.36 | 7.47     | 23.73      | 470         | 25.37 | 6.11     | 16.02      |
| 60–79 | 107         | 34.52 | 6.53     | 20.43      | 147         | 20.24 | 5.10     | 13.06      |
| 20–59 | 685         | 43.54 | 8.41     | 25.35      | 838         | 27.24 | 6.38     | 16.95      |

In 20 years stages, the age-decrease of the dynamometric force takes place practically in the same rhythm in both sexes in the synthetic series, until the age of 60. Thus, in the 40–59 years period, the dynamometric force (in absolute value) decreases compared to the 20–39 years by 13.22% in men and 13.30 in women. In the 60–79 years period, the dynamometric force of men decreases by 25.96% compared with the average recorded in the 20–39 years, while in women the decrease is of 30.83%. So, men conserve better their dynamometric force until an older age as compared to women. This is also demonstrated by the fact that the dynamometric force of women reaches 62.76%, from the average value of men in the 20–39 years period and 62.86% in the 40–59 years period, and after 60 years this percentage decreases to 58.63%.

The interpopulational variability of the average of the dynamometric force (Table 2) was analyzed for the 20–39 and 40–59 years periods, for which the number of subjects analyzed from each community allowed for a better statistical safety. For the 60–79 years, the small number of subjects for which the force was measured does not allow us a correct interpopulational analysis. However, this variability was analyzed for the 20–59 years.

The analysis of the data in Table 2 shows an interpopulational variability of the average values of the dynamometric force, wider in women than in men for all the age periods taken into study.

Thus, for the 20–39 years period, compared to the male synthetic series, the males from Răchiteni [4] have the highest average value ( $T = 3.3149$ ), next being the series from Butea and Săbăoani [2], the latter having no significant statistical differences compared to the synthetic series. The lowest averages of the dynamometric force can be seen in the male series from Hălăucești ( $T = 3.5640$ )



and Mircești ( $T = 2.7160$ ). The amplitude of the interpopulational variability for this age period is 5.45 Kg f ( $T = 5.2403$ ).

Table 2

Intergroup variability of the average values of the dynamometric force according to age periods

|                  | 20–39 years |          |            | 40–59 years |          |            | 60–79 years |          |            |
|------------------|-------------|----------|------------|-------------|----------|------------|-------------|----------|------------|
|                  | M           | $\delta$ | Dyn./stat. | M           | $\delta$ | Dyn./stat. | M           | $\delta$ | Dyn./stat. |
| Men              |             |          |            |             |          |            |             |          |            |
| Săbăoani         | 48.08       | 8.22     | 27.53      | 40.22       | 6.71     | 23.45      | 43.54       | 8.34     | 25.31      |
| Gherăești        | 46.10       | 7.20     | 26.92      | 39.43       | 7.74     | 23.31      | 42.97       | 8.17     | 25.23      |
| Fărăoani         | 46.72       | 8.25     | 27.16      | 40.53       | 5.34     | 24.17      | 43.97       | 7.75     | 25.85      |
| Prăjești         | 46.91       | 6.02     | 27.13      | 43.43       | 7.93     | 25.68      | 45.21       | 7.24     | 26.43      |
| Răchiteni        | 49.15       | 8.00     | 27.81      | 40.66       | 8.09     | 23.78      | 46.47       | 8.95     | 26.57      |
| Mircești         | 44.42       | 5.89     | 26.61      | 40.26       | 9.32     | 24.09      | 42.02       | 8.26     | 25.16      |
| Hălăucești       | 43.70       | 9.49     | 25.09      | 39.80       | 9.75     | 23.37      | 42.25       | 9.77     | 24.44      |
| Butea            | 48.37       | 8.17     | 25.56      | 39.91       | 6.65     | 23.18      | 42.56       | 8.16     | 24.57      |
| Synthetic series | 46.62       | 7.95     | 26.88      | 40.36       | 7.47     | 23.73      | 43.54       | 8.41     | 25.35      |
| Women            |             |          |            |             |          |            |             |          |            |
| Săbăoani         | 30.06       | 5.89     | 18.65      | 24.75       | 6.65     | 15.58      | 27.10       | 6.85     | 16.95      |
| Gherăești        | 26.94       | 5.97     | 16.88      | 22.89       | 6.22     | 14.53      | 24.52       | 6.44     | 15.48      |
| Fărăoani         | 24.87       | 5.38     | 15.76      | 21.53       | 5.59     | 13.68      | 22.71       | 5.74     | 14.42      |
| Prăjești         | 34.20       | 6.68     | 21.05      | 29.31       | 6.56     | 18.64      | 31.33       | 7.04     | 19.67      |
| Răchiteni        | 30.95       | 5.56     | 19.05      | 28.94       | 6.81     | 18.01      | 29.96       | 6.28     | 18.54      |
| Mircești         | 29.83       | 6.28     | 18.95      | 22.95       | 5.99     | 14.58      | 27.29       | 7.01     | 17.34      |
| Hălăucești       | 26.87       | 6.11     | 16.66      | 24.18       | 5.61     | 15.23      | 25.44       | 6.00     | 15.91      |
| Butea            | 29.87       | 5.72     | 18.49      | 28.20       | 5.77     | 17.68      | 28.73       | 5.81     | 17.94      |
| Synthetic series | 29.26       | 5.97     | 18.26      | 25.37       | 6.11     | 16.01      | 27.24       | 6.38     | 17.11      |

In women, for the same age period, the amplitude of the interpopulational variability of the average values of the dynamometric force is much higher, the difference between the series with the highest values (Prăjești) and the series with the lowest value (Fărăoani) being of 9.33 Kg f ( $T = 10.3666$ ). Compared to the female synthetic values, the highest average values can be found in the women from Prăjești ( $T = 6.7857$ ) and Răchiteni ( $T = 2.9137$ ). At the opposite pole, with the lowest values, are the female series from Fărăoani ( $T = 11.6631$ ), Hălăucești ( $T = 3.9569$ ) and Gherăești ( $T = 3.4117$ ). Also, in the 20–39 years period, the dynamometric force of the women from Prăjești [2] represents 72.90% from the dynamometric force of the men from the same community, the series from Fărăoani [2] having only 53.23% from the male average.

In the 40–59 years period, the amplitude of the interpopulational variability is smaller in both sexes. In men, the value difference between the series which show the highest average of the dynamometric force (Răchiteni) and the series

with the lowest average (Gherăești) is of 4.00 Kg f ( $T = 3.0534$ ). Also, from the statistical point of view, only the series from Răchiteni can be singled out as compared to the synthetic series ( $T = 2.9215$ ) in the plus value field. The other series have average values close to the synthetic series, the men from Răchiteni [4] having a plus value of 1.30 Kg f, at the opposite pole being the men from Gherăești [2], with a minus value of 0.93 Kg f.

In women, the amplitude of the interpopulational variability of the averages decreases as compared with the preceding period, the difference between the extreme series being of 7.78 Kg f ( $T = 10.6575$ ). Regarding the female synthetic series, significantly higher values have the women from Prăjești ( $T = 6.3878$ ) and Răchiteni ( $T = 4.9500$ ). The lowest values of the dynamometric force have the women from Fărăoani ( $T = 5.7200$ ), Gherăești ( $T = 4.2126$ ) and Mircești ( $T = 3.7230$ ). It is important to underline the fact that, for this age period, the women from Răchiteni keep better their dynamometric force, representing 71.17% from the average value of the males in the same community. In exchange, in Prăjești, men keep much better their dynamometric force, thus entering in the first position within the series with higher values than the synthetic series. In this situation, even if the women of the same community have the highest value of the dynamometric force among the analyzed series, in this age period they make 67.48% from the male average. The women from Fărăoani also show only 53.12% from the male average.

In the 20–59 period, the amplitude of the interpopulational variability of the dynamometric force is of 4.45 Kg f ( $T = 4.7849$ ) in men and 8.62 Kg f ( $T = 14.7288$ ) in women. Compared to the masculine synthetic series, significant average have the men from Răchiteni ( $T = 4.6098$ ) and Prăjești ( $T = 2.4795$ ). Among the masculine series with values that are lower as compared to the synthetic series, close to the statistic significance [5] are only the men from Mircești ( $T = 2.0266$ ).

In women, the interpopulational variability is much higher. As compared to the synthetic series, statistically significant averages have the series from Prăjești ( $T = 8.3401$ ), Răchiteni ( $T = 5.8912$ ) and Butea ( $T = 3.9210$ ). At the opposite pole, with significantly lower values are the series from Fărăoani ( $T = 11.4509$ ), Gherăești ( $T = 5.8912$ ) and Hălăucești (4.5000).

## CONCLUSION

The average values of the dynamometric force increase in the 30–39 years decade as compared to the 20–29 decade, in both sexes in the synthetic series, the increase being stronger in men. This phenomenon could be explained by the adaptation of the subjects of the 30–39 decade to the physical effort required both in agricultural activities and in housekeeping duties. Among the eight communities taken into study, this increase is present at Hălăucești, Răchiteni, Fărăoani and Butea in both sexes. After the age of 40, the dynamometric force decreases with

age. Until the age of 60, the age related decrease of the dynamometric force in the synthetic series takes place practically in the same rhythm, after which men conserve better this parameter. Thus, women achieve in the 20–39 years period, 62.76% of the average values of men and 62.86% in the 40–59 years period, and after 60 years this percentage decreases to 58.63%. Among the analyzed series only the women from Răchiteni and Butea conserve much better their dynamometric force.

Among the analyzed series, in the 20–39 years period, from the male average from the same communities, the highest percentage are shown by the women from Prăjești (72.90%) and Mircești (67.15%). The women from Fărăoani are on the last place, producing only 53.23%. In the 40–59 years period, the best conservation of the dynamometric force can be seen in the women from Răchiteni (71.17%), Butea (70.66%) and Prăjești (67.48%) who present the highest percentages from the average shown by the men from the same community. The women from Fărăoani are again on the last place, with 53.12% from the male average.

The interpopulational variability of the average values of the dynamometric force is more reduced in men than in women.

In the 20–39 years, for the male series, the interpopulational variability has an amplitude of 5.45 Kg f ( $T = 5.2403$ ). Compared to the masculine synthetic series, the men from Răchiteni have the highest average ( $T = 3.3149$ ), at the other pole being the men from Hălăucești, with the lowest average of the dynamometric force ( $T = 3.5640$ ). In the 40–59 years, the amplitude of the interpopulational variability is of 4.00 Kg f ( $T = 3.0534$ ) thus a little smaller than the previous period. However, as compared to the male synthetic series, only the men from Prăjești have a significant plus difference ( $T = 2.9215$ ), the other series having averages quite close to the synthetic series.

In women, the amplitude of the populational variability is higher, reaching 9.33 Kg f ( $T = 10.3666$ ) in the 20–39 years period and 7.78 Kg f ( $T = 10.6575$ ) in the 40–59 years period. In the 20–39 period, compared to the synthetic female series, the females from Prăjești have the highest average of the dynamometric force ( $T = 6.7857$ ), the women from Fărăoani having the lowest average ( $T = 11.6631$ ). Also, the women from Prăjești keep their supremacy in the 40–59 years period ( $T = 6.3878$ ) and the series from Fărăoani are again within the series with values lower than the synthetic series ( $T = 5.7200$ ).

During the 20–59 years period, as expected, the interpopulational variability is smaller in men ( $T = 4.7849$ ) and larger in women ( $T = 14.7288$ ). Compared to the male synthetic series significantly higher values have only the men from Răchiteni ( $T = 4.6098$ ) and Prăjești ( $T = 2.4795$ ). Among the series with lower values than the synthetic series, only the men from Mircești reach the threshold of statistic significance ( $T = 2.0266$ ). In women, significantly higher values as to the synthetic series have the series from Prăjești ( $T = 8.3401$ ) and Răchiteni ( $T = 5.8912$ ).

At the opposite pole, with the lowest values of the dynamometric force are the women from Fărăoani ( $T = 11.4509$ ) and Gherăești ( $T = 5.8912$ ).

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# MODIFICATIONS – IN TIME – IN THE PUBERTY OF GIRLS FROM TWO DIFFERENT ECOLOGICAL MEDIA

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The study was developed on two groups of girls with ages between 11 and 16 years, one formed of 664 girls from the Iași city, the other – of 723 subjects – from the rural area of the Iași county. For each subject, the menarche age was established (years and months). At the level of each group, the frequency of the puber and nonpuber was calculated on classes of age, the average pubertary age being established for each of the two groups. The analyses have evidenced that puberty is slightly retarded in the girls from the rural area, comparatively with those coming from the urban milieu. A comparison between the data obtained in the present study and those recorded on other batches – similar as to the subjects' origin and age – investigated in 1965 and 1985, showed that the average puberty age is accelerating in both ecological media, the process being more intense in the girls from the rural medium, comparatively with those from the city. Consequently, the urban–rural difference as to the average pubertary age reduced from 1 year and 5 months in 1965 to only 5 months in 2000.

## INTRODUCTION

The researches devoted to teenagers' growth and development, performed by the anthropology team of Iași in various historical stages, in the same regions, provided interesting data, that evidenced modifications – in time – of both the cephalo-facial and bodily sizes, and of sexual maturity's installation [9, 10].

The present study discusses the modifications occurring in the puberty period in girls from the Iași's urban and rural areas, in two different periods, namely between 1965–1985 and 1965–1988 and, respectively, 1965–2000. This aspect of the investigation was selected as the recent literature of the field makes mention of the ceasing down, in certain countries, of the acceleration process of the pubertary age, along with its stabilization or even deceleration [5]. With a view to evidencing such modifications and their intensity in time, our own results, obtained on two groups of girls – one from the city of Iași and the other from the rural area of the Iași county – were compared with the data collected on groups, similar as origin and age, investigated in 1965 [1] and 1985 [6, 8].

## MATERIALS AND METHOD

The material considered for the study consists of two groups of teenagers with ages between 11 and 16 years. The former, investigated during 1998, includes 664 girls from the city of Iași, while the latter – studied along the year 2003 – is formed of 723 girls from the rural area of the Iași county (*i.e.*, rural communities in the vicinity of the Iași city).

The two classical methods were applied for establishing girls' age at menarche, namely [3]:

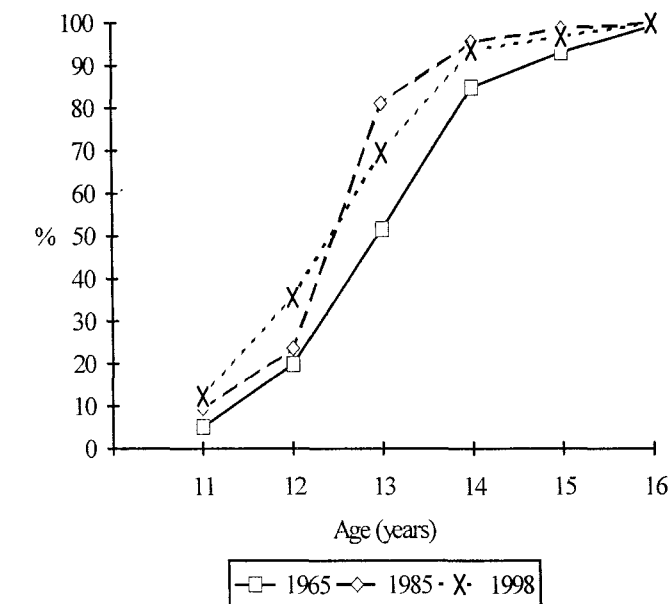
1. the *statu-quo* method, consisting in the interrogation of each subject on the installation or not of the menstrual cycle, followed by the calculation – on classes of age – of pubers and nonpubers' frequency in each of the two groups;

2. the collecting method, involving each subject's interrogation on the exact data (year, month) when the menarche occurred, on the basis of which the individual pubertary age could be established, thus permitting the calculation of pubers' frequency on classes of age, as a function of it, again in each of the two groups. Finally, the average pubertary age was calculated for each of the two groups, the data obtained being compared with those collected on batches similar as origin and age, investigated by the Iași team of anthropology – led by the late Maria Cristescu in 1965 [1] and 1985 [6, 8].

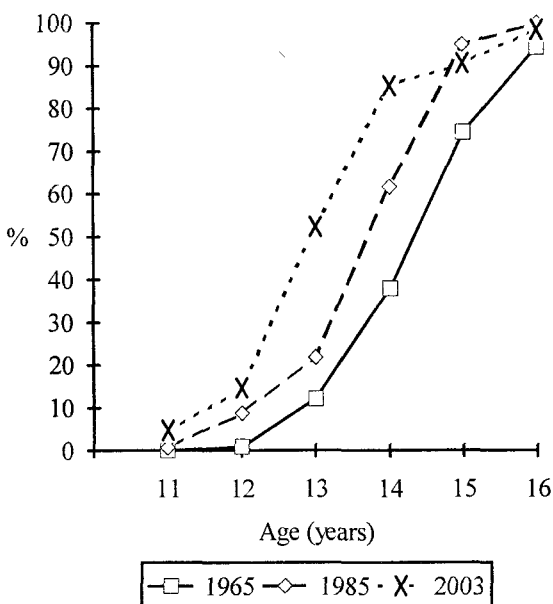
## RESULTS AND DISCUSSION

Fig. 1a is a graphical representation of the percent frequency of pubescent girls, on classes of age, from the urban batches under study, in the three different historical moments. Analysis of the information evidences that the frequency of pubescent girls from the same class of age generally increases from one historical moment to another. Thus, in the series investigated in 1985, comparatively with the one from 1965, the increasing ratio of pubescent's frequency is of about 4% for the first two classes of age, gets amplified to 30% at the age of 13, after which it diminishes to about 10% at the age of 14 and, respectively, to about 5% at 15 years. Nevertheless, in the 1998 batch, the pubescent subjects' frequency is higher by about 3% at the age of 11, and by about 12% at 12 years – comparatively with the 1985 group, yet lower by about 12% at the age of 13, and by 2% at 14 and 15 years. At the age of 16, however, all girls are pubescent, in both the 1985 and the 1998 batches. A comparison between the 1998 and the 1965 batches indicates that the frequency of pubescent subjects increases from one moment to another in all classes of age, the increase ratio advancing progressively with age at 11 and 13 years, after which it diminishes up to the age of 16. In general, the situation is similar in the rural batches (Fig. 1b). However, the differences among the 3 batches are much more evident here, comparatively with the urban milieu, which suggests that the acceleration of the

pubescent age is stronger in the rural areas, comparatively with the urban ones. At the same time, one should mention the fact that, in the 2003 group, the ratio of pubescent teenagers from the last two classes of age (15 and 16) is lower, comparatively with the 1985 one, yet higher than that of the 1965 group.



a



b

Fig. 1. – Curves of pubers' frequency on classes of age, in the three historical moments, for: **a** – urban series; **b** – rural series.

A similar situation was observed in the urban group for the 14 and 15 year classes of age, which might possibly be the consequence of the less favourable conditions of life in the post-December transition period, the effects of which had been more acutely felt in the more sensible stages of the girls' development.

As to the frequency of puber teenagers on classes of age, as a function of the age at menarche (Fig. 2a and b), differences should be mentioned both from one ecological region to another, and from one historical moment to another. As a consequence, in the

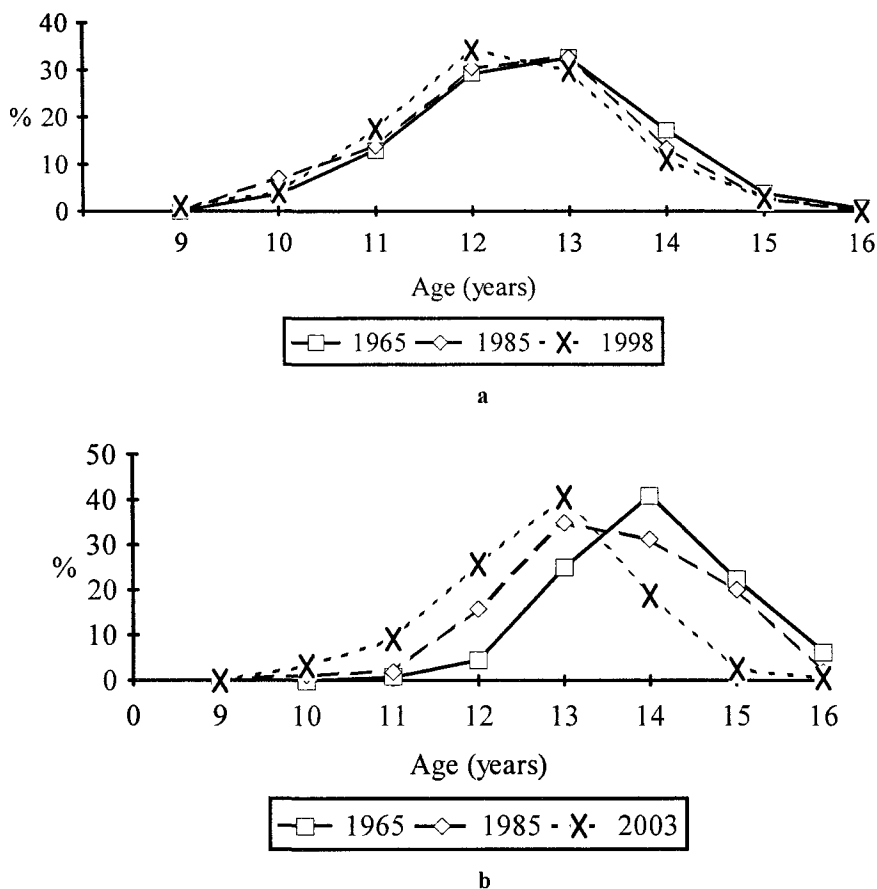


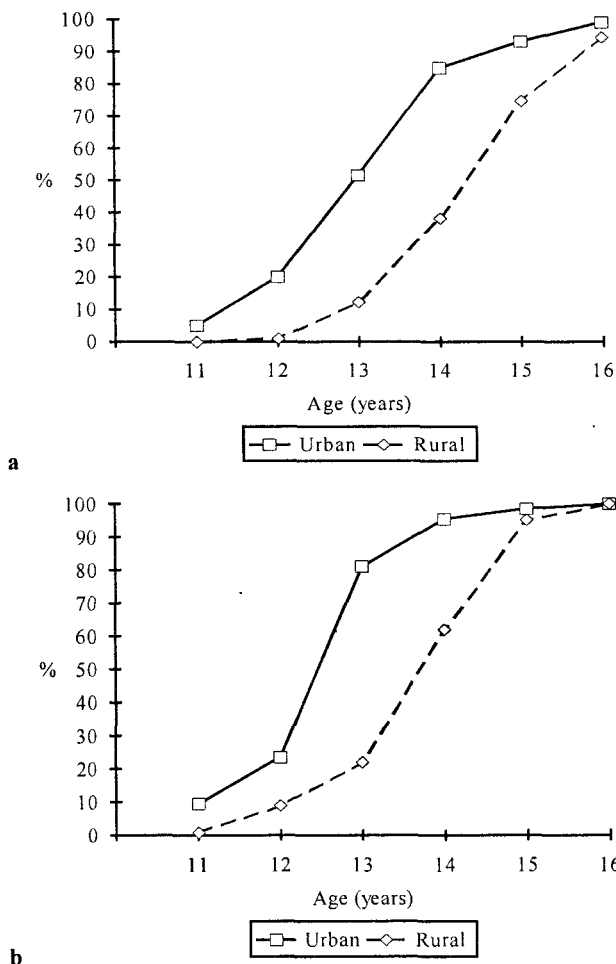
Fig. 2. – Curves of pubers' frequency as a function of the menarche age, in the three historical moments, for: a – urban series; b – rural series.

urban series (Fig. 2a), both in 1965 and in 1985, the pubescent subjects' frequency increases from 10 to 13 years, when the maximum value is attained, followed by its diminution with age, while in the 1998 series, the maximum frequency is recorded at the age of 12, followed again by its diminution with age. More than that, mention



should be made of the fact that, while in 1965, about 0.63 of the girls became pubescent at 16 years, in the other two moments, no such situation occurred. Also, one should outline that the ratio of pubescent girls before the age of 13 years was of 78% in 1965, of about 1984 in 1985 and, respectively, of 1986 in 1998.

In the rural series (Fig. 2b), the maximum frequency of the pubescent subjects is recorded – in 1965 – at the age of 14 years, while in the other two moments – at 13 years. In 1965, a nonpubescent girl was recorded at 10 years, yet 6.31% of them were pubescent at 16 years, while the frequency of 10 year-old pubescent subjects was more than double in 2003, comparatively with 1985 and, on the contrary, the cases of adolescent girls that became pubescent at the age of 16 reduced by 2% in the 1985 series and, respectively, by only 0.49% in the 2003 group. In the 1965 group, the ratio of pubescent subjects before the age of 13 was of 30%, while in the 1985 series it was of about 54% and in the 2003 one of 78%.



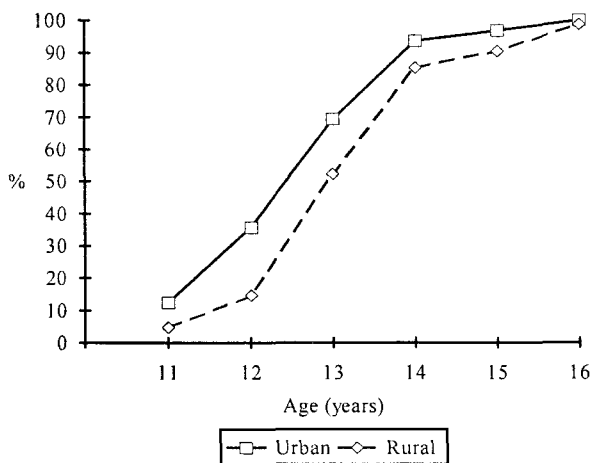


Fig. 3. – Curves of pubers' frequency on classes of age, as a comparison between the urban and the rural series, for each of the three historical moments: **a** – 1965; **b** – 1985; **c** – 2000.

It results from here that, from this point of view, too, the difference among the three series is stronger in the girls from the rural medium, comparatively with those of the urban one. As a matter of fact, this situation is well evidenced by the values of the

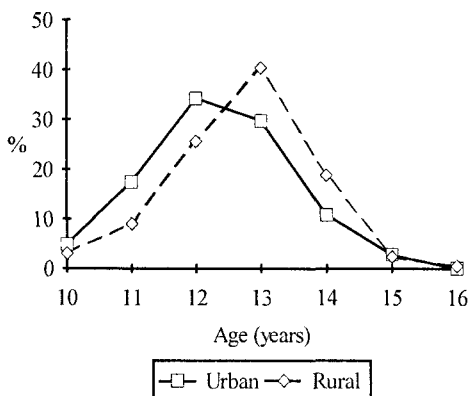
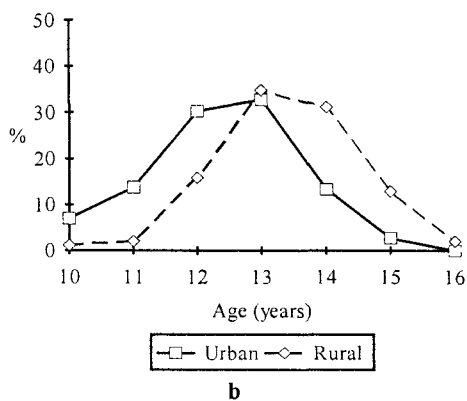
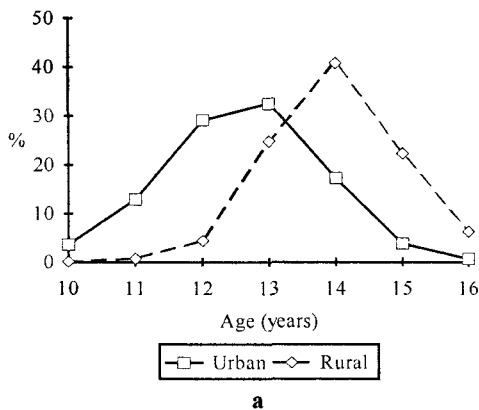


Fig. 4. – Curves of pubers' frequency as a function of the menarche age, as a comparison between the urban and the rural series, for each of the three historical moments: **a** – 1965; **b** – 1985; **c** – 2000.

pubertary average age. Indeed, if in the urban medium this parameter is reduced from 13 years and 2 weeks to 12 years and 9 months, in the rural one it is seen as reducing from 14 years and 5 months to 13 years and 2 months. Thus, the reduction in the urban medium is of 3 months and a half (3 months and 2 weeks), while in the rural one of 1 year and 3 months.

As to the urban-rural differences (Fig. 3 and 4), they are evidenced by an earlier puberty of the girls in the urban series, comparatively with those of the rural one, the differences diminishing from the first up to the last historical moment. The situation is well illustrated by the average pubescent ages, namely: 13 years and 2 weeks *versus* 14 years and 5 months in 1965, 12 years and 11 months *versus* 13 years and 9 months in 1985, and 12 years and 9 months *versus* 13 years and 2 months in 2000.

### CONCLUSIONS

The results of the investigations permit the conclusion that the acceleration process of the average pubertary age is still present, at least in the series of teenagers considered for the study. The acceleration rate is more intense in the adolescent girls from the rural medium, comparatively with those of the urban one, which causes a reduction in the urban-rural differences as to the average pubertary age from 1 year and 5 months, in 1965, to only 5 months, in 2000. The more intense acceleration rate in the rural medium, comparatively with the urban one, might be explained by the economic and social-type modifications suffered in time by the communities under analysis. Indeed, in some localities, the influences of urbanization manifested, which is not surprising, if considering the close neighbourhood of the Iași city. On the other hand, the results obtained agree with those of the literature, supporting a standardization tendency of the average pubescent age, although the influence of the hereditary element should not be left aside [2].

Another observation to be made is that, in both groups, the acceleration rate decreases in time, from one historical moment to another, a situation actually evidenced everywhere by the literature of the field [5].

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## OBESITY FROM THE VIEWPOINT OF MEDICAL ANTHROPOLOGY

ELENA RADU, LUMINIȚA CIOTARU

The paper represents the synthesis of some anthropological researches in populations, conducted between 1980–1984 in most of the historical provinces of Romania, including almost 14,600 subjects from urban and rural areas. What is highlighted, from the medical anthropology viewpoint, is the prevalence of overweight and obesity varying with urban/rural environment, geographical area and profession. In the global sample, one out of three Romanians is overweight; in a statistics by age, after the age of 50, one of two Romanians is overweight. Having considered the fact that obesity is a major risk factor in cardiovascular diseases, its precocious tracing out by means of anthropometrical methodology will contribute to launching of prevention programmes, as a result of a responsible health politics.

The anthropological research of the body mass and constitution is part of a monitoring programme for the nutritional health status of the Romanian population, with special reference to potentially pathological deviations, as underweight and overweight, included in the causative chain of cardiovascular and metabolic diseases that occupy the first places of risk in morbidity and mortality rates of the Romanian population.

Obesity represents a great burden upon individual health, the health care domain, its impact being amplified by the fact that it is both a chronic disease and a major risk factor for other degenerative and chronic diseases. Obesity is associated with high rates of morbidity and mortality, hence “the battle” for reducing the number of risk factors responsible for its incidence.

Obesity has become a public health issue especially in rich industrialized societies, and also to a high degree in the poor and less modernized ones.

Recent data indicate that the prevalence of Class II overweight range in the population aged 20–60 years is between 10 and 20% in USA Whites and most European peoples. The prevalence is higher (between 20 and 40%) in the females from the East Europe’s countries and the Mediterranean area.

According to WHO publications, the highest prevalence of this overweight category in females is recorded with the Pacific Islands populations – Melanesians, Micronesians and Polynesians (between 40 and 76% of the population).

In Europe the frequency of the obesity cases rose up by approximately 10 even 40% and above in the last 10 years, up to 50% in Great Britain (1980).

The Romanian medical anthropology has been involved in the complex matter of obesity, providing the most accessible way of identification, while being the fastest, the most economic and non-intrusive method – the anthropometrical one.

In WHO's view, anthropometry is both an assessing instrument for the biological health status, defining the normal nutritional health, and for the pathological potential trends as underweight and overweight, and a social and technical evaluation instrument for the social and economic conditions of the populations.

The involvement of anthropology in the nutritional health issues is represented by its contribution to a precocious and rapid diagnose of the body mass pathological potential trends by determination of the population's anthropological normality ranges.

## MATERIAL AND METHOD

This paper represents a synthesis of the anthropological researches from the 80s upon urban and rural populations, on a population sample of 6611 males and 8002 females from the main historical provinces of Romania (Banat, Transylvania, Moldavia and Dobrogea\*).

The data analysis was performed considering sex and age, urban/rural residence, geographical area (paper partially in press) and social and professional status.

Given that body mass is hard to measure on the field, the practical definition of obesity is made by means of the Quetelet index (BMI) that associates height with weight; according to Anglo-Saxons authors, BMI represents a body mass index. Subjects' classification by the Quetelet index sorts out the following categories:

- Normal – between 18.50 and 24.99;
- Class I obesity range – between 25.00 and 29.99
- Class II obesity range – between 30.00 and 39.99;
- Class III obesity range – over 40.00.

The WHO Experts Board proposed that different ranges of overweight established through the Quetelet index values of 25, 30 and 40 should represent different ranges of obesity (I, II, III).

We considered the first category of the Quetelet index evaluation scale (between 25.00 and 29.99) as indicating a predisposition to obesity, *i.e.* subjects with a high potential in developing obesity.

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\* The researches in Moldavia, Banat and Dobrogea were conducted by Elena Radu, Camelia Lungu Șandru, Luminița Rosețeanu, Cristiana Glavce; those in Transylvania were conducted by Cristiana Glavce, Elena Radu and Maria Vlădescu.

Table 1

Quetelet index variability in Romanian male and female population

| Categories    |             | MALE |       | FEMALE |       |
|---------------|-------------|------|-------|--------|-------|
|               |             | N    | %     | N      | %     |
| Underweight   | < 16        | 0    | 0     | 2      | 0.02  |
|               | 16-16.99    | 4    | 0.06  | 31     | 0.39  |
|               | 17-18.49    | 83   | 1.26  | 166    | 2.07  |
| Total         |             | 87   | 1.32  | 199    | 2.48  |
| Normality     | 18.50-24.99 | 4175 | 63.15 | 4933   | 61.65 |
| Overweight    | 25-29.99    | 2001 | 30.27 | 2235   | 27.93 |
|               | 30-39.99    | 347  | 5.25  | 624    | 7.80  |
|               | > 40        | 1    | 0.02  | 11     | 0.14  |
| Total         |             | 2349 | 35.54 | 2870   | 35.87 |
| General total |             | 6611 | 100   | 8002   | 100   |

In addition to the body mass measures included in the Quetelet index, we examined other dimensions involved in the definition of obesity: height, sitting height, thorax and abdominal perimeter, so we could analyze, by drawing a chart of the "Z" standardized variables, the age related evolution of these body mass measures, in correlation with the evolution of those ascertained by the Quetelet index.

### DATA ANALYSIS AND CONCLUSIONS

Analysis of the Quetelet body mass index average variability reveals the absence of a sexual dimorphism: 63.15 of the male population and 61.65% of the female population are included in the normality class; 35.54% of the male population and 35.87% of the female population are included in overweight categories; 30.27 of the male population and 27.93 of the female population are included in Class I overweight range, identified by us as "predisposition to obesity"; 5.27% of the males and 7.94% of the females are included in the categories of Class II and III overweight ranges, with a Quetelet index > 30.00, assimilated with constituted obesity.

As for the underweight, its frequency is almost double in women (2.48%), in comparison with men (1.32%).

These data support our statement that one out of three Romanians is, from the anthropological viewpoint, overweight.

If we analyze the age-related variability of the Quetelet body mass index some frequency differences between men and women are recorded.

Considering the previous finding that one out of three Romanians is overweight (therefore a frequency around 33%), we notice a differential increase with age of overweight variants' proportion.

– In males this increase begins between the ages of 40 and 44 (43.05%) and continues at the age of 49 (42.53%), at the age of 54 (46.35%), at the age of 59 (50.33%), at the age of 60 (30.74).

– In females this increase begins between the ages of 35 and 39 (40.49%) and continues at the age of 44 (47.13%), at the age of 49 (51.93%), at the age of 54 (58.99%), at the age of 59 (79.34%), at the age of 60 (35.10%).

In males, the frequency of overweight after the age of 54 indicates that one out of two men is overweight; in females, after the age of 45 one out of two women is overweight, and between the ages of 55 and 59 more than three out of four women are overweight (Tables 2 and 3; Figs. 1 and 2). After the age of 60, in both sexes the proportion of the overweight variants decreases.

Analysis of Figs. 3 and 4 highlights an increase of the body mass measures represented by thorax and waist perimeters, after the age of 40 in males and females, in the latter case the increase being stronger, especially the waist perimeter (after the age of 50).

The chart figures plastically the age-related “involution” of the vertical body measures (height, sitting height), due to subside of the vertebral column and collapse of the foot vault, contrary with the increase of the horizontal body measures.

If we analyze the Quetelet body mass index' average values by groups-age (Table 4), we do not record significantly differentiated values between male and female populations, except for the age class of 50–54.

The analysis of the body mass indexes by the (urban/rural) residence area of this population shows a considerable difference between women coming from the rural areas and those coming from the urban areas; the former present overweight in a percentage of 43.43, in comparison with those from the urban area with a percentage of only 32.74. In addition, the frequency of the women, included in the Class I overweight range, assimilated with obesity, is 10.68% in the rural area and 6.80% in the urban area (Table 5).

Between the male series we noticed frequency differences, but lower, with the particularity that in the rural area the overweight males' percentage is higher (39.12% out of whom 5.66% are obese) than that of the urban area (30.00% out of whom 4.64% are obese).

In Tables 6 and 7 regarding the variability of the Quetelet index' average values, the differences between rural and urban areas are low (knowing that the average values could “screen” the variability's differences, in addition or in minus, the classification scales being much closer to the real numbers).

The increase of the Quetelet index' average value is recorded after the age of 40, both in the urban and the rural population, indicating the prevalence of the overweight category ( $BMI > 25.00$ ).



Table 2

Quetelet index variability by age groups in Romanian male series

| Categories        |             | 17-24 years |       | 25-29 years |       | 30-34 years |       | 35-39 years |       | 40-44 years |       | 45-49 years |       | 50-54 years |       | 55-59 years |       | > 60 years |       |
|-------------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|------------|-------|
|                   |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N          | %     |
| Underweight       | < 16        | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0          | 0.00  |
|                   | 16-16.99    | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 3           | 0.49  | 1           | 0.22  | 0          | 0.00  |
|                   | 17-18.49    | 9           | 1.23  | 18          | 1.65  | 11          | 1.02  | 6           | 0.68  | 9           | 1.09  | 9           | 1.06  | 8           | 1.32  | 6           | 1.34  | 7          | 5.55  |
| Underweight total |             | 9           | 1.23  | 18          | 1.65  | 11          | 1.02  | 6           | 0.68  | 9           | 1.09  | 9           | 1.06  | 11          | 1.81  | 7           | 1.56  | 7          | 5.55  |
| Normality         | 18.50-24.99 | 616         | 84.73 | 794         | 73.04 | 697         | 64.77 | 527         | 59.88 | 459         | 55.83 | 476         | 56.39 | 313         | 51.82 | 214         | 48.08 | 79         | 62.69 |
| Overweight        | 25-29.99    | 95          | 13.06 | 253         | 23.27 | 323         | 30.01 | 294         | 33.40 | 300         | 36.49 | 301         | 35.66 | 225         | 37.25 | 177         | 39.77 | 33         | 26.19 |
|                   | 30-39.99    | 7           | 0.96  | 21          | 1.93  | 45          | 4.18  | 53          | 6.02  | 54          | 6.56  | 58          | 6.87  | 55          | 9.10  | 47          | 10.56 | 7          | 5.55  |
|                   | > 40        | 0           | 0.00  | 1           | 0.09  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 0          | 0.00  |
| Overweight total  |             | 102         | 14.02 | 275         | 25.29 | 368         | 34.19 | 347         | 39.42 | 354         | 43.05 | 359         | 42.53 | 280         | 46.35 | 224         | 50.33 | 140        | 30.74 |
| General total     |             | 727         | 100   | 1087        | 100   | 1076        | 100   | 880         | 100   | 822         | 100   | 844         | 100   | 604         | 100   | 445         | 100   | 226        | 100   |

Table 3

Quetelet index variability by age groups in Romanian female series

| Categories        |             | 17-24 years |       | 25-29 years |       | 30-34 years |       | 35-39 years |       | 40-44 years |       | 45-49 years |       | 50-54 years |       | 55-59 years |       | > 60 years |       |
|-------------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|------------|-------|
|                   |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N          | %     |
| Underweight       | < 16        | 0           | 0.00  | 1           | 0.07  | 0           | 0.00  | 0           | 0.00  | 0           | 0.00  | 1           | 0.11  | 0           | 0.00  | 0           | 0.00  | 0          | 0.00  |
|                   | 16-16.99    | 9           | 0.80  | 9           | 0.63  | 6           | 0.39  | 1           | 0.08  | 0           | 0.00  | 2           | 0.22  | 0           | 0.00  | 2           | 0.84  | 2          | 2.12  |
|                   | 17-18.49    | 44          | 3.92  | 55          | 3.89  | 26          | 1.71  | 12          | 1.07  | 13          | 1.21  | 2           | 0.22  | 6           | 1.10  | 4           | 1.68  | 4          | 4.24  |
| Underweight total |             | 53          | 4.72  | 65          | 4.59  | 32          | 2.10  | 13          | 1.15  | 13          | 1.21  | 5           | 0.55  | 6           | 1.10  | 6           | 2.52  | 6          | 6.36  |
| Normality         | 18.50-24.99 | 906         | 80.89 | 1049        | 74.34 | 1034        | 68.34 | 651         | 58.38 | 551         | 51.64 | 428         | 47.50 | 217         | 39.88 | 42          | 17.72 | 55         | 58.51 |
| Overweight        | 25-29.99    | 148         | 13.21 | 266         | 18.85 | 365         | 24.12 | 355         | 31.83 | 374         | 35.05 | 339         | 37.62 | 216         | 39.70 | 147         | 62.02 | 25         | 26.59 |
|                   | 30-39.99    | 12          | 1.07  | 31          | 2.19  | 80          | 5.28  | 95          | 8.52  | 127         | 11.90 | 128         | 14.20 | 101         | 18.56 | 42          | 17.72 | 8          | 8.51  |
|                   | > 40        | 1           | 0.08  | 0           | 0.00  | 2           | 0.13  | 1           | 0.08  | 2           | 0.18  | 1           | 0.11  | 4           | 0.73  | 0           | 0.00  | 0          | 0.00  |
| Overweight total  |             | 161         | 14.36 | 297         | 21.04 | 447         | 29.53 | 451         | 40.49 | 503         | 47.13 | 468         | 51.93 | 321         | 58.99 | 189         | 79.34 | 33         | 35.10 |
| General total     |             | 1120        | 100   | 1411        | 100   | 1513        | 100   | 1115        | 100   | 1067        | 100   | 901         | 100   | 544         | 100   | 237         | 100   | 94         | 100   |

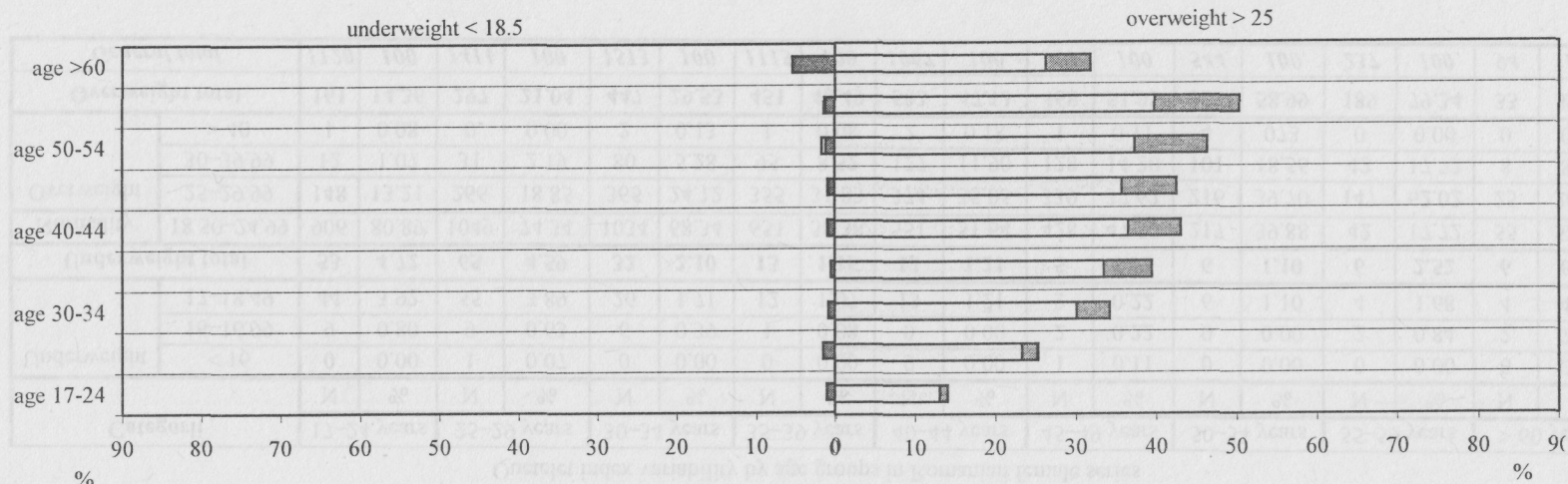


Fig. 1. – Quetelet index distribution (B.M.I.) in Romanian male population.

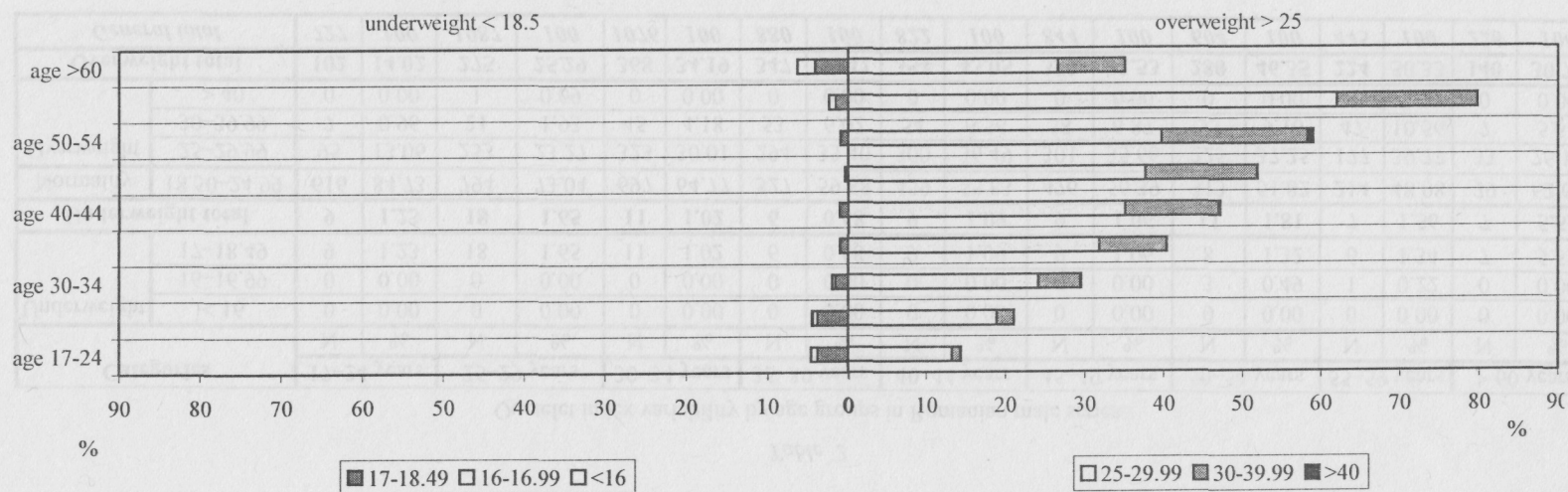


Fig. 2. – Quetelet index distribution (B.M.I.) in Romanian female population.

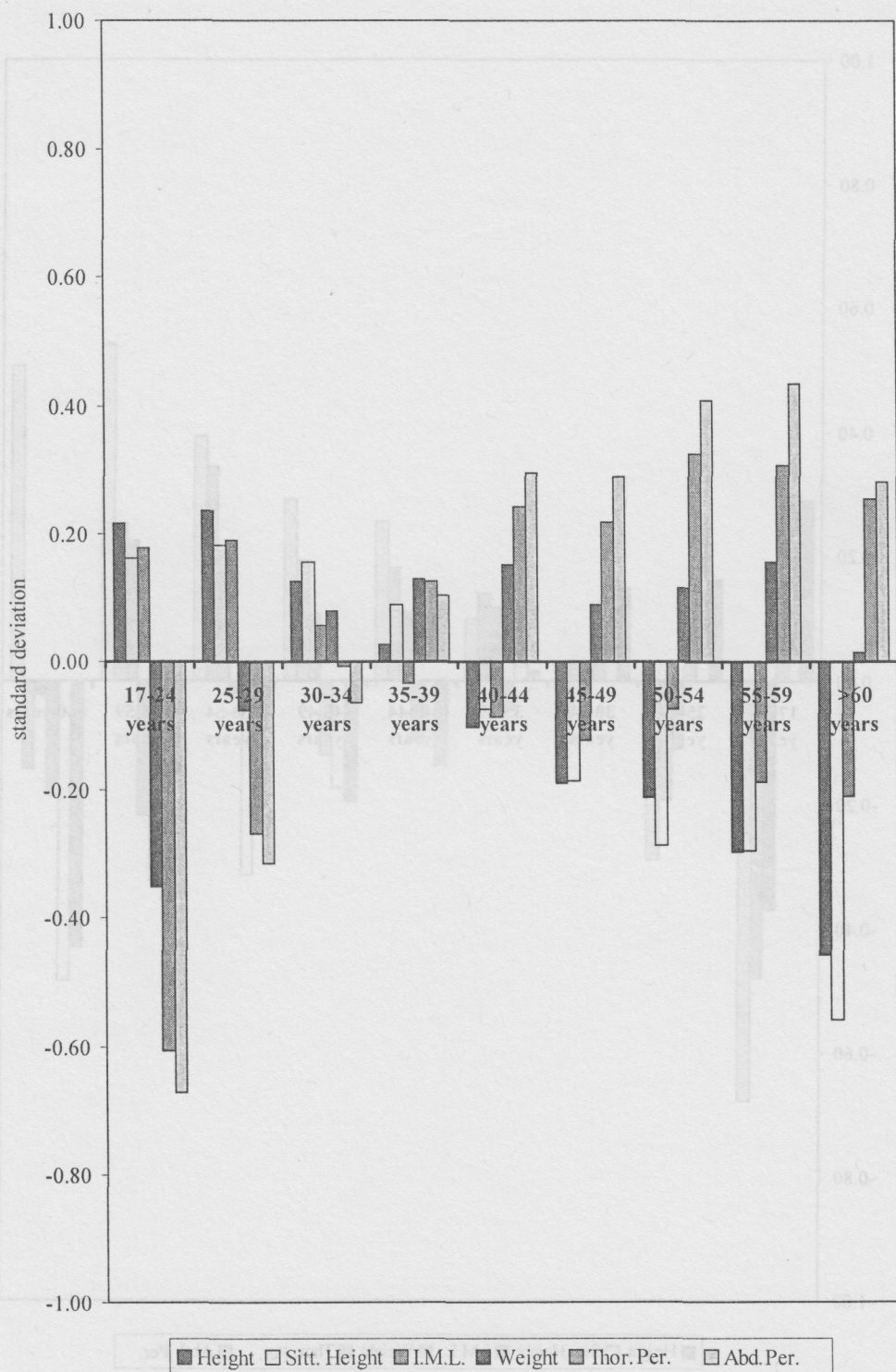


Fig. 3. – Age evolution of the main body mass measure ("Z" normed variables) in males, in Romania.

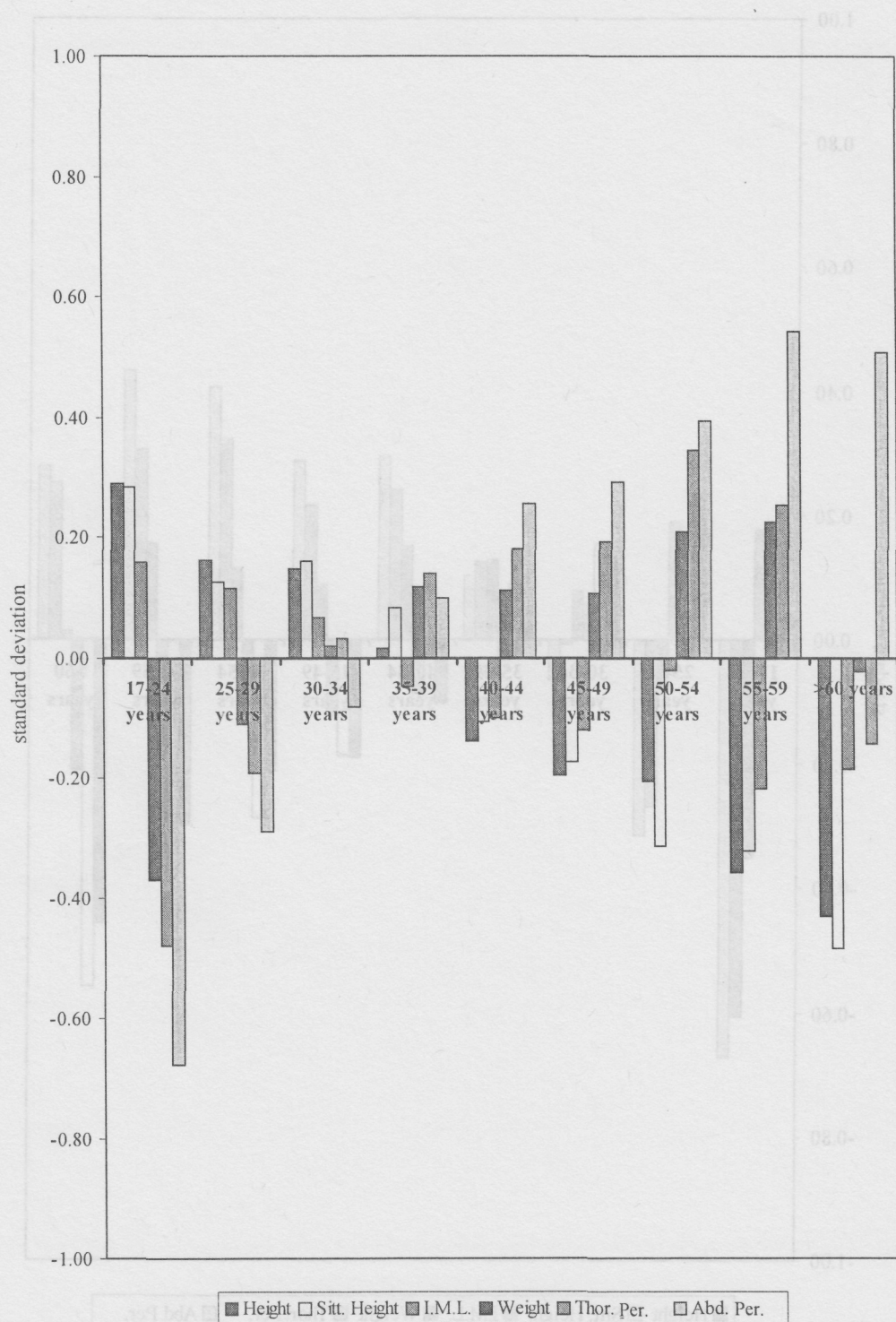


Fig. 4. – Age evolution of the main body mass measure (“Z” normed variables) in females, in Romania.

Table 4

Quetelet index variability of Romanian population

| Age groups  | male series |       |       |       |        |         | female series |       |       |       |        |         |
|-------------|-------------|-------|-------|-------|--------|---------|---------------|-------|-------|-------|--------|---------|
|             | Number      | Minim | Maxim | Mean  | St dev | Var qut | Number        | Minim | Maxim | Mean  | St dev | Var qut |
| 17-24 years | 875         | 16 47 | 32 58 | 22 39 | 2 30   | 10 28   | 1478          | 16 04 | 41 89 | 22 17 | 2 75   | 12 40   |
| 25-29 years | 1087        | 17 41 | 40 12 | 23 57 | 2 81   | 11 91   | 1419          | 15 90 | 39 00 | 22 90 | 3 14   | 13 70   |
| 30-34 years | 1076        | 17 21 | 36 84 | 24 29 | 3 02   | 12 45   | 1513          | 16 17 | 42 09 | 23 92 | 3 44   | 14 39   |
| 35-39 years | 880         | 17 61 | 38 18 | 24 46 | 3 26   | 13 33   | 1115          | 16 70 | 42 54 | 24 60 | 3 68   | 14 97   |
| 40-44 years | 822         | 17 99 | 39 08 | 24 77 | 3 31   | 13 36   | 1067          | 17 48 | 40 45 | 25 29 | 3 91   | 15 46   |
| 45-49 years | 844         | 17 57 | 35 91 | 24 72 | 3 28   | 13 29   | 901           | 14 39 | 42 32 | 25 63 | 3 89   | 15 19   |
| 50-54 years | 604         | 16 54 | 39 26 | 24 85 | 3 59   | 14 45   | 544           | 17 19 | 46 38 | 26 40 | 4 37   | 16 54   |
| 55-59 years | 445         | 16 34 | 37 43 | 25 29 | 3 54   | 13 99   | 237           | 16 30 | 39 64 | 25 52 | 4 48   | 17 57   |

Table 5

Quetelet index variability in Romanian urban and rural population

| Categories  |            | MALE  |       |       |       | FEMALE |       |       |       |
|-------------|------------|-------|-------|-------|-------|--------|-------|-------|-------|
|             |            | Urban |       | Rural |       | Urban  |       | Rural |       |
|             |            | N     | %     | N     | %     | N      | %     | N     | %     |
| Underweight | <16        | 0     | 0 00  | 0     | 0 00  | 1      | 0 02  | 1     | 0 04  |
|             | 16-16 99   | 1     | 0 02  | 3     | 0 12  | 22     | 0 39  | 9     | 0 38  |
|             | 17-18 49   | 49    | 1 22  | 34    | 1 30  | 126    | 2 23  | 40    | 1 71  |
| Normality   | 18 5-24 99 | 2388  | 59 63 | 1787  | 68 57 | 3658   | 64 63 | 1275  | 54 44 |
| Overweight  | 25-29 99   | 1340  | 33 46 | 661   | 25 36 | 1468   | 25 94 | 767   | 32 75 |
|             | 30-39 99   | 226   | 5 64  | 121   | 4 64  | 376    | 6 64  | 248   | 10 59 |
|             | >40        | 1     | 0 02  | 0     | 0 00  | 9      | 0 16  | 2     | 0 09  |

Table 6

Quetelet index age variability in Romanian urban population

| Age groups  | female series |       |       |       |         |           | male series |       |       |       |         |           |
|-------------|---------------|-------|-------|-------|---------|-----------|-------------|-------|-------|-------|---------|-----------|
|             | N             | Minim | Maxim | Mean  | St. dev | Var. qut. | N           | Minim | Maxim | Mean  | St. dev | Var. qut. |
| 17–24 years | 1205          | 16 34 | 41 89 | 22 08 | 2 72    | 12 30     | 660         | 16 47 | 30 85 | 22 00 | 2 14    | 9 72      |
| 25–29 years | 1148          | 15 90 | 39 00 | 22 73 | 3 09    | 13 58     | 794         | 17 41 | 40 12 | 23 60 | 2 83    | 11 99     |
| 30–34 years | 1232          | 16 17 | 42 09 | 23 60 | 3 38    | 14 31     | 718         | 17 21 | 36 84 | 24 32 | 3 10    | 12 75     |
| 35–39 years | 810           | 16 70 | 42 54 | 24 46 | 3 52    | 14 41     | 510         | 17 61 | 38 18 | 24 77 | 3 35    | 13 52     |
| 40–44 years | 712           | 17 48 | 40 41 | 25 36 | 3 76    | 14 83     | 442         | 17 99 | 39 08 | 25 13 | 3 27    | 13 30     |
| 45–49 years | 559           | 16 61 | 42 32 | 25 82 | 3 81    | 14 77     | 450         | 17 57 | 35 91 | 25 07 | 3 38    | 13 50     |
| 50–54 years | 307           | 18 06 | 46 38 | 26 99 | 4 32    | 16 00     | 315         | 16 93 | 39 26 | 25 75 | 3 54    | 13 75     |
| >55 years   | 53            | 17 47 | 39 64 | 26 18 | 4 28    | 16 34     | 264         | 18 25 | 37 43 | 26 23 | 3 42    | 13 02     |

Table 7

Quetelet index age variability in Romanian rural population

| Age groups  | female series |       |       |       |          |           | male series |       |       |       |          |           |
|-------------|---------------|-------|-------|-------|----------|-----------|-------------|-------|-------|-------|----------|-----------|
|             | N             | Minim | Maxim | Mean  | St. dev. | Var. qut. | N           | Minim | Maxim | Mean  | St. dev. | Var. qut. |
| 17–24 years | 273           | 16 04 | 32 25 | 22 62 | 2 78     | 12 30     | 165         | 17 77 | 30 85 | 23 10 | 2 43     | 10 50     |
| 25–29 years | 271           | 16 57 | 38 27 | 23 61 | 3 26     | 13 83     | 794         | 17 41 | 40 12 | 23 60 | 2 83     | 11 99     |
| 30–34 years | 281           | 16 59 | 34 79 | 24 13 | 3 77     | 15 61     | 718         | 17 21 | 36 84 | 24 32 | 3 10     | 12 75     |
| 35–39 years | 305           | 18 15 | 38 45 | 24 97 | 4 06     | 16 27     | 510         | 17 61 | 38 18 | 24 77 | 3 35     | 13 52     |
| 40–44 years | 355           | 17 64 | 40 45 | 25 15 | 4 20     | 16 69     | 442         | 17 99 | 39 08 | 25 13 | 3 27     | 13 02     |
| 45–49 years | 342           | 14 39 | 37 66 | 25 31 | 4 01     | 15 83     | 450         | 17 57 | 35 91 | 25 07 | 3 38     | 13 50     |
| 50–54 years | 237           | 17 19 | 40 79 | 25 64 | 4 32     | 16 86     | 315         | 16 93 | 39 26 | 25 75 | 3 54     | 13 75     |
| 55–59 years | 184           | 16 30 | 36 20 | 25 33 | 4 54     | 17 91     | 264         | 18 25 | 37 43 | 26 23 | 3 42     | 13 02     |
| >60 years   | 94            | 16 34 | 39 32 | 23 84 | 4 37     | 18 33     |             |       |       |       |          |           |

The analysis of the body mass indexes by the group-ages in urban and rural areas, emphasizes considerable differences between them, as regards the overweight's prevalence and within it the prevalence of the "predisposition" to obesity and to proper obesity (Tables 8, 9, 10 and 11).

The urban male series presents, beginning with the ages of 30–43, a significantly increased overweight compared with the rural one; thus, the urban series presents, between the ages of 30 and 34, an overweight frequency of 36.21%; until the age of 39 a frequency of 44.12%; until the age of 44 one of 46.15%; until the age of 49 a frequency of 50.67%; until the age of 54 a frequency of 60.00% and after the age of 55 a frequency of over 63.64%.

In comparison, in the male rural series the overweight frequency is no bigger than 39.47% for all the age groups: between the ages of 40 and 44 the frequency is 39.47%, until the age of 49 it is 33.25%, until the age of 54 – 31.49%, until the age of 59 – 30.94% and after the age of 60 the frequency is 31.75%.

If in the male urban population overweight increases constantly after the age of 34, in the male rural population this frequency decreases after the age of 45.

In the female population, the overweight frequency is higher compared with the male population; the rural female series presents a higher overweight frequency than the urban ones, beginning with the age group of 30–34 (37.37% in comparison with 27.76%); between the ages of 35 and 39, the rural female series presents an overweight frequency of 46.23% compared with the urban one (38.27%); between the ages of 50 and 54 the urban female series presents an overweight frequency of 64.50% compared with 51.90% in the rural female series; after the age of 55, the rural female series presents an overweight frequency of 86.41% compared with the urban one (56.69%).

Figs. 5, 6, 7 and 8 point out the mentioned differentiations, illustrating the age-related changes of the body mass measures, the decrease of the vertical dimensions and the increase of the horizontal ones (the perimeters).

In the rural male population, compared with the urban one, the vertical dimensions decrease very much and the perimeters very little, while in the urban male population, these measures increase considerably.

Stronger differences are recorded in the female populations, as the urban female series presents a thorax and waist perimeters significantly higher than the rural one.

Higher values of the thorax and waist perimeters represent also indicators of an overweight increase.

As to the geographical variability of overweight (see the articles included in *Ann. Roum. Anthropol.* 2003 and *Ann. Roum. Anthropol.* 2004, for detail analysis), we confine ourselves to say that the historical provinces examined differ from one another as regards the overweight frequency as follows: in the Dobrogea population we recorded the highest frequency of overweight among the male population, 37.89%, out of which 27.16% present "a predisposition to obesity" and 10.73% show obesity; in the female series the overweight frequency is 59.34%, out of which 38.11% present "a predisposition to obesity" and 21.23% show obesity.

Table 8

Quetelet index variability by age groups in Romanian male series, urban area

| Categories           |             | 20–24 years |              | 25–29 years |              | 30–34 years |              | 35–39 years |              | 40–44 years |              | 45–49 years |              | 50–54 years |              | > 55 years |              |
|----------------------|-------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|
|                      |             | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N          | %            |
| Underweight          | < 16        | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0          | 0            |
|                      | 16–16 99    | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0 00         | 1           | 0 32         | 0          | 0            |
|                      | 17–18 49    | 6           | 1 17         | 15          | 1 89         | 8           | 1 11         | 3           | 0 59         | 4           | 0 90         | 7           | 1 56         | 3           | 0 95         | 3          | 1 14         |
| <b>Total</b>         |             | <b>6</b>    | <b>1.17</b>  | <b>15</b>   | <b>1.89</b>  | <b>8</b>    | <b>1.11</b>  | <b>3</b>    | <b>0.59</b>  | <b>4</b>    | <b>0.90</b>  | <b>7</b>    | <b>1.56</b>  | <b>4</b>    | <b>1.27</b>  | <b>3</b>   | <b>1.14</b>  |
| Normality            | 18 50–24 99 | 430         | 83 98        | 562         | 70 78        | 450         | 62 67        | 282         | 55 29        | 234         | 52 94        | 215         | 47 78        | 122         | 38 73        | 93         | 35 23        |
| Overweight           | 25–29 99    | 72          | 14 06        | 199         | 25 06        | 227         | 31 62        | 189         | 37 06        | 172         | 38 91        | 195         | 43 33        | 154         | 48 89        | 132        | 50           |
|                      | 30–39 99    | 4           | 0 78         | 17          | 2 14         | 33          | 4 60         | 36          | 7 06         | 32          | 7 24         | 33          | 7 33         | 35          | 11 11        | 36         | 13 64        |
|                      | > 40        | 0           | 0            | 1           | 0 13         | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0 00         | 0           | 0            | 0          | 0            |
| <b>Total</b>         |             | <b>76</b>   | <b>14.84</b> | <b>217</b>  | <b>27.33</b> | <b>260</b>  | <b>36.21</b> | <b>225</b>  | <b>44.12</b> | <b>204</b>  | <b>46.15</b> | <b>228</b>  | <b>50.67</b> | <b>189</b>  | <b>60.00</b> | <b>168</b> | <b>63.64</b> |
| <b>General total</b> |             | <b>512</b>  | <b>100</b>   | <b>794</b>  | <b>100</b>   | <b>718</b>  | <b>100</b>   | <b>510</b>  | <b>100</b>   | <b>442</b>  | <b>100</b>   | <b>450</b>  | <b>100</b>   | <b>315</b>  | <b>100</b>   | <b>264</b> | <b>100</b>   |

Table 9

Quetelet index variability by age groups in Romanian female series, urban area

| Categories           |             | 20–24 years |              | 25–29 years |              | 30–34 years |              | 35–39 years |              | 40–44 years |              | 45–49 years |              | 50–54 years |              | > 55 years |              |
|----------------------|-------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|
|                      |             | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N          | %            |
| Underweight          | < 16        | 0           | 0            | 1           | 0 09         | 0           | 0 00         | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0          | 0            |
|                      | 16–16 99    | 8           | 0 94         | 8           | 0 70         | 4           | 0 32         | 1           | 0 12         | 0           | 0            | 1           | 0 18         | 0           | 0 00         | 0          | 0            |
|                      | 17–18 49    | 40          | 4 72         | 46          | 4 04         | 20          | 1 62         | 8           | 0 99         | 8           | 1 12         | 1           | 0 18         | 2           | 0 65         | 1          | 1 89         |
| <b>Total</b>         |             | <b>48</b>   | <b>5.67</b>  | <b>55</b>   | <b>4.82</b>  | <b>24</b>   | <b>1.95</b>  | <b>9</b>    | <b>1.11</b>  | <b>8</b>    | <b>1.12</b>  | <b>2</b>    | <b>0.36</b>  | <b>2</b>    | <b>0.65</b>  | <b>1</b>   | <b>1.89</b>  |
| Normality            | 18 50–24 99 | 687         | 81 11        | 865         | 75 88        | 866         | 70 29        | 491         | 60 62        | 368         | 51 69        | 252         | 45 08        | 107         | 34 85        | 22         | 41 51        |
| Overweight           | 25–29 99    | 103         | 12 16        | 199         | 17 46        | 284         | 23 05        | 250         | 30 86        | 255         | 35 81        | 227         | 40 61        | 130         | 42 35        | 20         | 37 74        |
|                      | 30–39 99    | 8           | 0 94         | 21          | 1 84         | 56          | 4 55         | 59          | 7 28         | 80          | 11 24        | 77          | 13 77        | 65          | 21 17        | 10         | 18 87        |
|                      | > 40        | 1           | 0 12         | 0           | 0            | 2           | 0 16         | 1           | 0 12         | 1           | 0 14         | 1           | 0 18         | 3           | 0 98         | 0          | 0            |
| <b>Total</b>         |             | <b>112</b>  | <b>13.22</b> | <b>220</b>  | <b>19.30</b> | <b>342</b>  | <b>27.76</b> | <b>310</b>  | <b>38.27</b> | <b>336</b>  | <b>47.19</b> | <b>305</b>  | <b>54.56</b> | <b>198</b>  | <b>64.50</b> | <b>30</b>  | <b>56.60</b> |
| <b>General total</b> |             | <b>847</b>  | <b>100</b>   | <b>1140</b> | <b>100</b>   | <b>1232</b> | <b>100</b>   | <b>810</b>  | <b>100</b>   | <b>712</b>  | <b>100</b>   | <b>559</b>  | <b>100</b>   | <b>307</b>  | <b>100</b>   | <b>53</b>  | <b>100</b>   |



Table 10

Quetelet index variability by age groups in Romanian male series, rural area

| Categories           |             | 17–24 years |              | 25–29 years |              | 30–34 years |              | 35–39 years |              | 40–44 years |              | 45–49 years |              | 50–54 years |              | 55–59 years |              | >60 years  |              |
|----------------------|-------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|
|                      |             | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N           | %            | N          | %            |
| Underweight          | < 16        | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0          | 0            |
|                      | 16–16 99    | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 2           | 0 69         | 1           | 0 55         | 0          | 0            |
|                      | 17–18 49    | 3           | 1 40         | 3           | 1 02         | 3           | 0 84         | 3           | 0 81         | 5           | 1 32         | 2           | 0 51         | 5           | 1 73         | 3           | 1 66         | 7          | 5 56         |
| <b>Total</b>         |             | <b>3</b>    | <b>1.40</b>  | <b>3</b>    | <b>1.02</b>  | <b>3</b>    | <b>0.84</b>  | <b>3</b>    | <b>0.81</b>  | <b>5</b>    | <b>1.32</b>  | <b>2</b>    | <b>0.51</b>  | <b>7</b>    | <b>2.42</b>  | <b>4</b>    | <b>2.21</b>  | <b>7</b>   | <b>5.56</b>  |
| Normality            | 18 50–24 99 | 186         | 86 51        | 232         | 79 18        | 247         | 68 99        | 245         | 66 22        | 225         | 59 21        | 261         | 66 24        | 191         | 66 09        | 121         | 66 85        | 79         | 62 70        |
| Overweight           | 25–29 99    | 23          | 10 70        | 54          | 18 43        | 96          | 26 82        | 105         | 28 38        | 128         | 33 68        | 106         | 26 90        | 71          | 24 57        | 45          | 24 86        | 33         | 26 19        |
|                      | 30–39 99    | 3           | 1 40         | 4           | 1 37         | 12          | 3 35         | 17          | 4 59         | 22          | 5 79         | 25          | 6 35         | 20          | 6 92         | 11          | 6 08         | 7          | 5 56         |
|                      | > 40        | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0           | 0            | 0          | 0            |
| <b>Total</b>         |             | <b>26</b>   | <b>12.09</b> | <b>58</b>   | <b>19.80</b> | <b>108</b>  | <b>30.17</b> | <b>122</b>  | <b>32.97</b> | <b>150</b>  | <b>39.47</b> | <b>131</b>  | <b>33.25</b> | <b>91</b>   | <b>31.49</b> | <b>56</b>   | <b>30.94</b> | <b>40</b>  | <b>31.75</b> |
| <b>General total</b> |             | <b>215</b>  | <b>100</b>   | <b>293</b>  | <b>100</b>   | <b>358</b>  | <b>100</b>   | <b>370</b>  | <b>100</b>   | <b>380</b>  | <b>100</b>   | <b>394</b>  | <b>100</b>   | <b>289</b>  | <b>100</b>   | <b>181</b>  | <b>100</b>   | <b>126</b> | <b>100</b>   |

Table 11

Quetelet index variability by age groups in Romanian female series, rural area

| Categories    |             | 17–24 years |       | 25–29 years |       | 30–34 years |       | 35–39 years |       | 40–44 years | 45–49 years |     | 50–54 years |     | 55–59 years |     | >60 years |    |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------------|-----|-------------|-----|-------------|-----|-----------|----|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %           | N   | %           | N   | %           | N   | %         |    |       |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0           | 1   | 0.29        | 0   | 0           | 0   | 0         | 0  | 0     |
|               | 16–16.99    | 1           | 0.37  | 1           | 0.37  | 2           | 0.71  | 0           | 0     | 0           | 0           | 1   | 0.29        | 0   | 0           | 2   | 1.09      | 2  | 2.13  |
|               | 17–18.49    | 4           | 1.47  | 9           | 3.32  | 6           | 2.14  | 4           | 1.31  | 5           | 1.41        | 1   | 0.29        | 4   | 1.69        | 3   | 1.63      | 4  | 4.26  |
| Total         |             | 5           | 1.83  | 10          | 3.69  | 8           | 2.85  | 4           | 1.31  | 5           | 1.41        | 3   | 0.88        | 4   | 1.69        | 5   | 2.72      | 6  | 6.38  |
| Normality     | 18.50–24.99 | 219         | 80.22 | 184         | 67.90 | 168         | 59.79 | 160         | 52.46 | 183         | 51.55       | 176 | 51.46       | 110 | 46.41       | 20  | 10.87     | 55 | 58.51 |
| Overweight    | 25–29.99    | 45          | 16.48 | 67          | 24.72 | 81          | 28.83 | 105         | 34.43 | 119         | 33.52       | 112 | 32.75       | 86  | 36.29       | 127 | 69.02     | 25 | 26.60 |
|               | 30–39.99    | 4           | 1.47  | 10          | 3.69  | 24          | 8.54  | 36          | 11.80 | 47          | 13.24       | 51  | 14.91       | 36  | 15.19       | 32  | 17.39     | 8  | 8.51  |
|               | > 40        | 0           | 0.00  | 0           | 0     | 0           | 0     | 0           | 0     | 1           | 0.28        | 0   | 0           | 1   | 0.42        | 0   | 0         | 0  | 0     |
| Total         |             | 98          | 17.95 | 77          | 28.41 | 105         | 37.37 | 141         | 46.23 | 167         | 47.04       | 163 | 47.66       | 123 | 51.90       | 159 | 86.41     | 33 | 35.11 |
| General total |             | 322         | 100   | 271         | 100   | 281         | 100   | 305         | 100   | 355         | 100         | 342 | 100         | 237 | 100         | 184 | 100       | 94 | 100   |

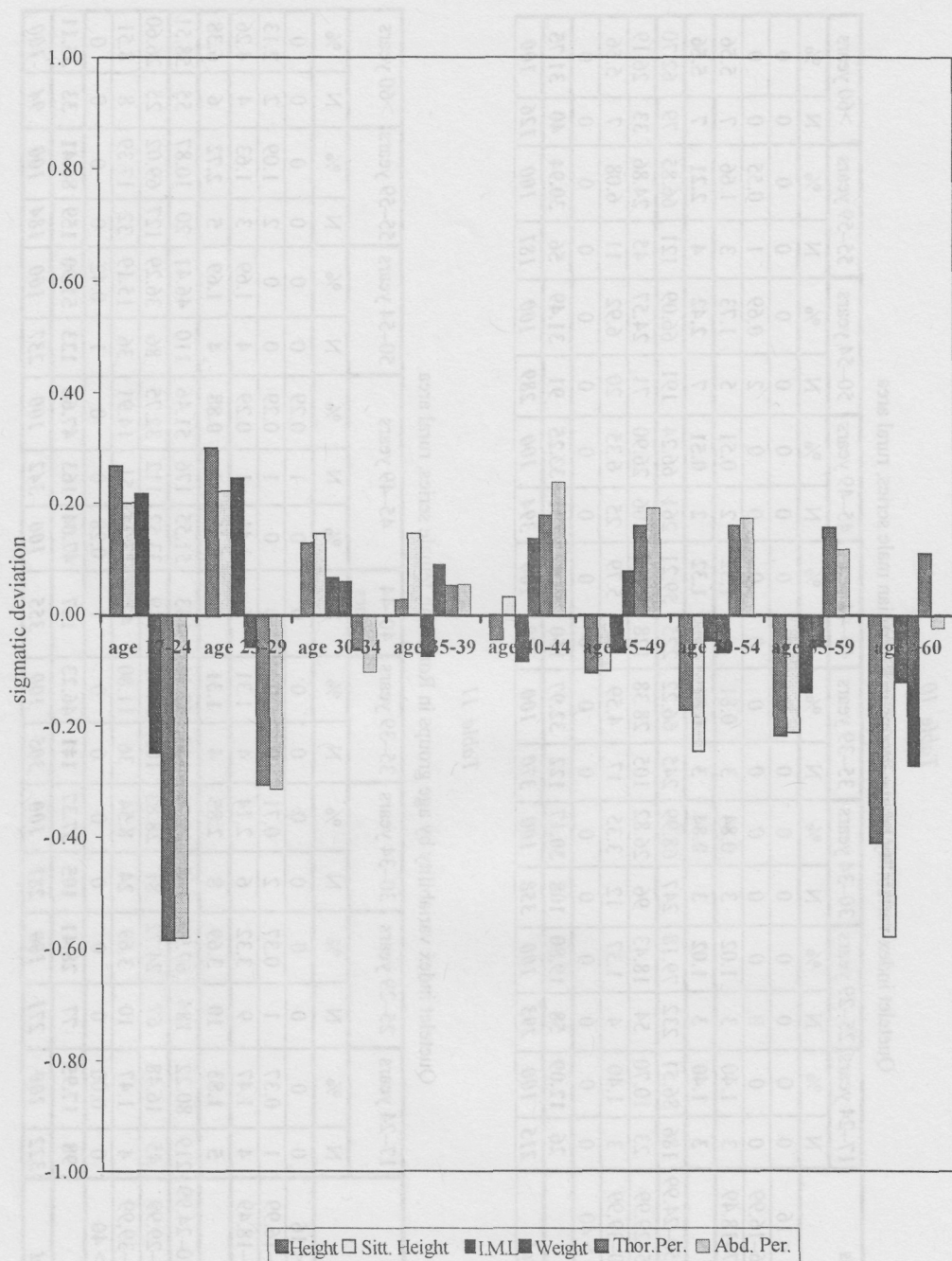


Fig. 5. – Age related evolution of principal body mass measures (Z standardized variables) in Romania, male rural population.

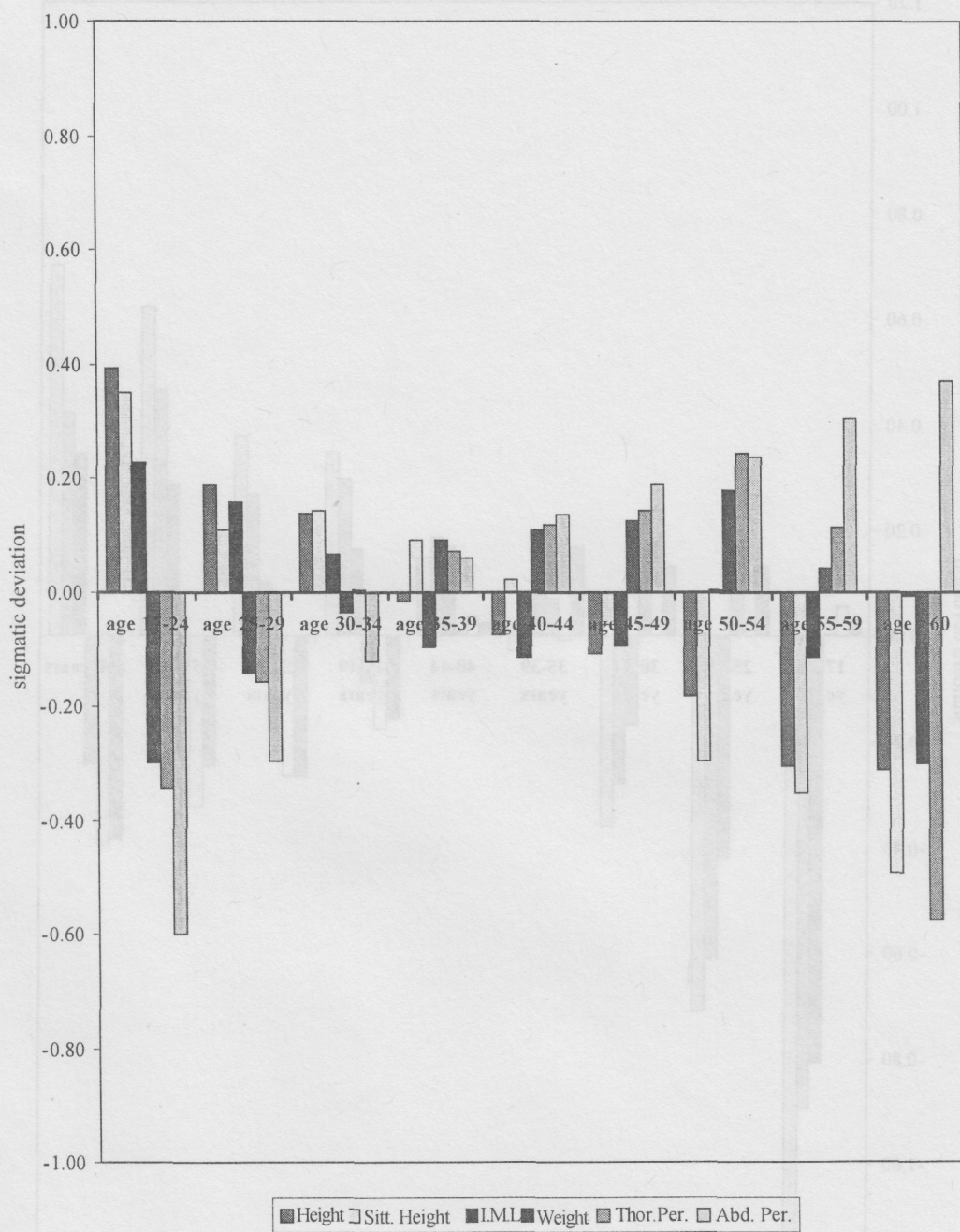


Fig. 6. – Age related evolution of principal body mass measures (Z standardized variables) in Romania, female rural population.

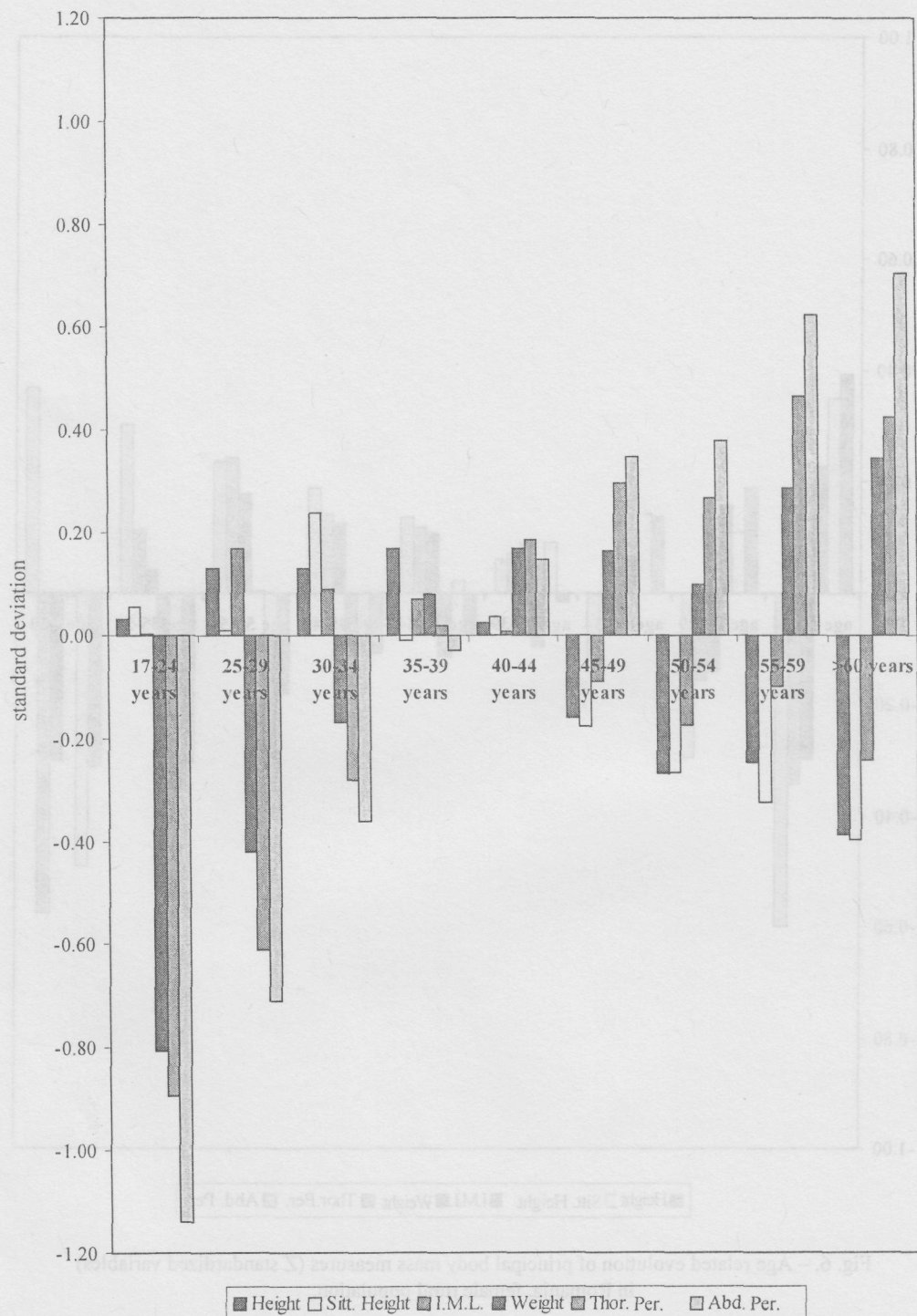


Fig. 7. – Age evolution of the main body mass measures (“Z” normed variables) in male urban population, Romania.

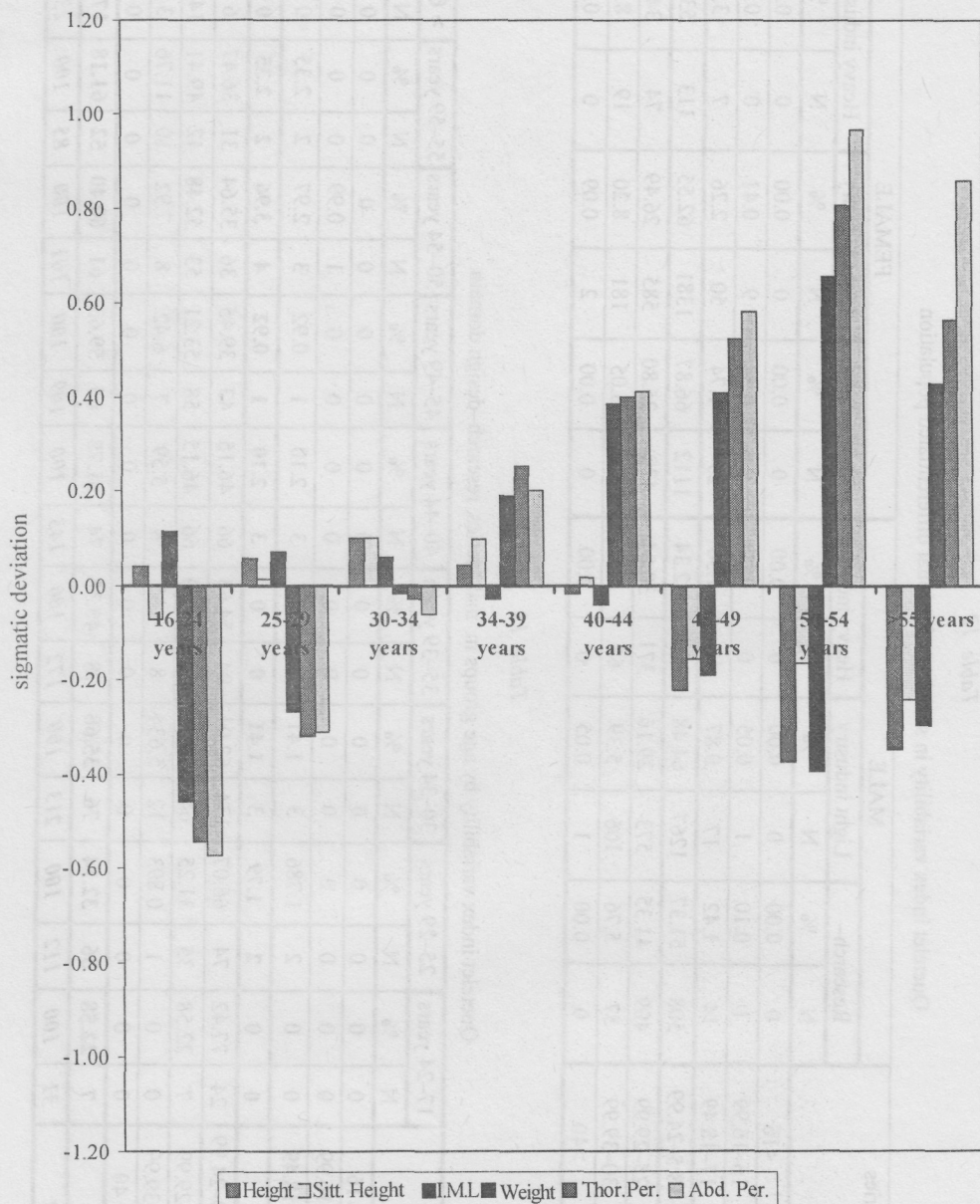


Fig. 8. – Age evolution of the main body mass measures (“Z” normed variables) in female urban population, Romania.

Table 12

Quetelet index variability in social–professional differentiated population

| Categories  |            | MALE      |       |                |       |                |       | FEMALE    |       |                |       |                |       |
|-------------|------------|-----------|-------|----------------|-------|----------------|-------|-----------|-------|----------------|-------|----------------|-------|
|             |            | Research– |       | Light industry |       | Heavy industry |       | Research– |       | Light industry |       | Heavy industry |       |
|             |            | N         | %     | N              | %     | N              | %     | N         | %     | N              | %     | N              | %     |
| Underweight | <16        | 0         | 0 00  | 0              | 0 00  | 0              | 0 00  | 0         | 0 00  | 0              | 0 00  | 0              | 0 00  |
|             | 16–16 99   | 1         | 0 10  | 1              | 0 05  | 0              | 0 00  | 9         | 0 54  | 9              | 0 41  | 0              | 0 00  |
|             | 17–18 49   | 14        | 1 42  | 17             | 0 87  | 18             | 1 50  | 29        | 1 74  | 50             | 2 26  | 7              | 3 29  |
| Normality   | 18 5–24 99 | 508       | 51 37 | 1267           | 64 48 | 750            | 62 34 | 1112      | 66 87 | 1381           | 62 55 | 113            | 53 05 |
| Overweight  | 25–29 99   | 409       | 41 35 | 573            | 29 16 | 371            | 30 84 | 429       | 25 80 | 585            | 26 49 | 74             | 34 74 |
|             | 30–39 99   | 57        | 5 76  | 106            | 5 39  | 64             | 5 32  | 84        | 5 05  | 181            | 8 20  | 19             | 8 92  |
|             | >40        | 0         | 0 00  | 1              | 0 05  | 0              | 0 00  | 0         | 0 00  | 2              | 0 09  | 0              | 0 00  |

Table 13

Quetelet index variability by age groups in male series research–design domain

| Categories    |             | 17–24 years |       | 25–29 years |       | 30–34 years |       | 35–39 years |       | 40–44 years |       | 45–49 years |       | 50–54 years |       | 55–59 years |       | > 60 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N          | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0          | 0     |
|               | 16–16 99    | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 1           | 0 99  | 0           | 0     | 0          | 0     |
|               | 17–18 49    | 0           | 0     | 2           | 1 786 | 3           | 1 41  | 0           | 0     | 3           | 2 10  | 1           | 0 92  | 3           | 2 97  | 2           | 2 35  | 0          | 0     |
| Total         |             | 0           | 0     | 2           | 1.79  | 3           | 1.41  | 0           | 0     | 3           | 2.10  | 1           | 0.92  | 4           | 3.96  | 2           | 2.35  | 0          | 0     |
| Normality     | 18 50–24 99 | 24          | 77 42 | 74          | 66 07 | 134         | 62 91 | 94          | 54 65 | 66          | 46 15 | 43          | 39 45 | 36          | 35 64 | 31          | 36 47 | 6          | 26 09 |
| Overweight    | 25–29 99    | 7           | 22 58 | 35          | 31 25 | 64          | 30 05 | 70          | 40 70 | 66          | 46 15 | 58          | 53 21 | 53          | 52 48 | 42          | 49 41 | 14         | 60 87 |
|               | 30–39 99    | 0           | 0     | 1           | 0 893 | 12          | 5 634 | 8           | 4 65  | 8           | 5 59  | 7           | 6 42  | 8           | 7 92  | 10          | 11 76 | 3          | 13 04 |
|               | > 40        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0          | 0     |
| Total         |             | 7           | 22.58 | 36          | 32.14 | 76          | 35.68 | 78          | 45.35 | 74          | 51.75 | 65          | 59.63 | 61          | 60.40 | 52          | 61.18 | 17         | 73.91 |
| General total |             | 31          | 100   | 112         | 100   | 213         | 100   | 172         | 100   | 143         | 100   | 109         | 100   | 101         | 100   | 85          | 100   | 23         | 100   |

Table 14

Quetelet index variability by age groups in male series light industry domain

| Categories    |             | 17-24 years |       | 25-29 years |       | 30-34 years |       | 35-39 years |       | 40-44 years |       | 45-49 years |       | 50-54 years |       | 55-59 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 16-16 99    | 1           | 0 22  | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 17-18 49    | 7           | 1 57  | 1           | 0 18  | 1           | 0 30  | 2           | 1 18  | 1           | 0 75  | 4           | 2 65  | 0           | 0     | 1           | 1 23  |
| Total         |             | 8           | 1 80  | 1           | 0 18  | 1           | 0 30  | 2           | 1 18  | 1           | 0 75  | 4           | 2 65  | 0           | 0 00  | 1           | 1 23  |
| Normality     | 18 50-24 99 | 382         | 85 84 | 393         | 71 72 | 200         | 60 98 | 90          | 52 94 | 66          | 49 62 | 72          | 47 68 | 39          | 35 78 | 25          | 30 86 |
| Overweight    | 25-29 99    | 52          | 11 69 | 140         | 25 55 | 113         | 34 45 | 61          | 35 88 | 50          | 37 59 | 59          | 39 07 | 56          | 51 38 | 42          | 51 85 |
|               | 30-39 99    | 3           | 0 67  | 13          | 2 37  | 14          | 4 27  | 17          | 10    | 16          | 12 03 | 16          | 10 60 | 14          | 12 84 | 13          | 16 05 |
|               | > 40        | 0           | 0     | 1           | 0 18  | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
| Total         |             | 55          | 12 36 | 154         | 28 10 | 127         | 38 72 | 78          | 45 88 | 66          | 49 62 | 75          | 49 67 | 70          | 64 22 | 55          | 67 90 |
| General total |             | 445         | 100   | 548         | 100   | 328         | 100   | 170         | 100   | 133         | 100   | 151         | 100   | 109         | 100   | 81          | 100   |

Table 15

Quetelet index variability by age groups in male series, heavy industry domain

| Categories    |             | 17-24 years |       | 25-29 years |       | 30-34 years |       | 35-39 years |       | 40-44 years |       | 45-49 years |       | 50-54 years |       | 55-59 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 16-16 99    | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 17-18 49    | 9           | 4 81  | 2           | 1 49  | 4           | 2 26  | 1           | 0 60  | 0           | 0     | 2           | 1 05  | 0           | 0     | 0           | 0     |
| Total         |             | 9           | 4.81  | 2           | 1.49  | 4           | 2.26  | 1           | 0.60  | 0           | 0.00  | 2           | 1.05  | 0           | 0.00  | 0           | 0.00  |
| Normality     | 18 50-24 99 | 158         | 84 49 | 105         | 78 36 | 116         | 65 54 | 98          | 58 33 | 95          | 56 89 | 100         | 52 63 | 47          | 44 76 | 31          | 41 33 |
| Overweight    | 25-29 99    | 18          | 9 63  | 24          | 17 91 | 50          | 28 25 | 58          | 34 52 | 64          | 38 32 | 78          | 41 05 | 45          | 42 86 | 34          | 45 33 |
|               | 30-39 99    | 2           | 1 07  | 3           | 2 24  | 7           | 3 95  | 11          | 6 55  | 8           | 4 79  | 10          | 5 26  | 13          | 12 38 | 10          | 13 33 |
|               | > 40        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
| Total         |             | 20          | 10.70 | 27          | 20.15 | 57          | 32.20 | 69          | 41.07 | 72          | 43.11 | 88          | 46.32 | 58          | 55.24 | 44          | 58.67 |
| General total |             | 187         | 100   | 134         | 100   | 177         | 100   | 168         | 100   | 167         | 100   | 190         | 100   | 105         | 100   | 75          | 100   |

Table 16

Quetelet index variability by age groups in female series, research–design domain

| Categories    |             | 17–24 years |       | 25–29 years |       | 30–34 years |       | 35–39 years |       | 40–44 years |       | 45–49 years |       | 50–54 years |       | 55–59 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 16–16 99    | 3           | 1 40  | 4           | 1 34  | 1           | 0 24  | 0           | 0     | 0           | 0     | 1           | 0 62  | 0           | 0     | 0           | 0     |
|               | 17–18 49    | 8           | 3 72  | 7           | 2 35  | 7           | 1 71  | 3           | 1 08  | 4           | 1 84  | 0           | 0     | 0           | 0     | 0           | 0     |
| Total         |             | 11          | 5.12  | 11          | 3.69  | 8           | 1.95  | 3           | 1.08  | 4           | 1.84  | 1           | 0.62  | 0           | 0.00  | 0           | 0.00  |
| Normality     | 18 50–24 99 | 91          | 42 33 | 242         | 81 21 | 330         | 80 49 | 188         | 67 38 | 127         | 58 53 | 93          | 57 76 | 32          | 45 71 | 9           | 69 23 |
| Overweight    | 25–29 99    | 111         | 51 63 | 40          | 13 42 | 66          | 16 10 | 69          | 24 73 | 71          | 32 72 | 43          | 26 71 | 27          | 38 57 | 2           | 15 38 |
|               | 30–39 99    | 2           | 0 93  | 5           | 1 68  | 6           | 1 46  | 19          | 6 81  | 15          | 6 91  | 24          | 14 91 | 11          | 15 71 | 2           | 15 38 |
|               | > 40        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
| Total         |             | 113         | 52.56 | 45          | 15.10 | 72          | 17.56 | 88          | 31.54 | 86          | 39.63 | 67          | 41.61 | 38          | 54.29 | 4           | 30.77 |
| General total |             | 215         | 100   | 298         | 100   | 410         | 100   | 279         | 100   | 217         | 100   | 161         | 100   | 70          | 100   | 13          | 100   |

Table 17

Quetelet index variability by age groups in female series, light industry domain

| Categories    |             | 17–24 years |       | 25–29 years |       | 30–34 years |       | 35–39 years |       | 40–44 years |       | 45–49 years |       | 50–54 years |       | 55–59 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 16–16 99    | 3           | 0 41  | 2           | 0 48  | 2           | 0 54  | 1           | 0 56  | 1           | 0 50  | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 17–18 49    | 24          | 3 29  | 14          | 3 35  | 7           | 1 88  | 1           | 0 56  | 1           | 0 50  | 1           | 0 55  | 1           | 0 88  | 1           | 6 67  |
| Total         |             | 27          | 3.70  | 16          | 3.83  | 9           | 2.41  | 2           | 1.11  | 2           | 1.01  | 1           | 0.55  | 1           | 0.88  | 1           | 6.67  |
| Normality     | 18 50–24 99 | 605         | 82 99 | 302         | 72 25 | 216         | 57 91 | 85          | 47 22 | 71          | 35 68 | 66          | 36 46 | 33          | 29 20 | 3           | 20 00 |
| Overweight    | 25–29 99    | 90          | 12 35 | 88          | 21 05 | 121         | 32 44 | 76          | 42 22 | 87          | 43 72 | 76          | 41 99 | 39          | 34 51 | 8           | 53 33 |
|               | 30–39 99    | 7           | 0 96  | 12          | 2 87  | 27          | 7 24  | 17          | 9 44  | 38          | 19 10 | 38          | 20 99 | 39          | 34 51 | 3           | 20 00 |
|               | > 40        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 1           | 0 50  | 0           | 0     | 1           | 0 88  | 0           | 0     |
| Total         |             | 97          | 13.31 | 100         | 23.92 | 148         | 39.68 | 93          | 51.67 | 126         | 63.32 | 114         | 62.98 | 79          | 69.91 | 11          | 73.33 |
| General total |             | 729         | 100   | 418         | 100   | 373         | 100   | 180         | 100   | 199         | 100   | 181         | 100   | 113         | 100   | 15          | 100   |



Table 18

Quetelet index variability by age groups in female series heavy industry domain

| Categories    |             | 17–24 years |       | 25–29 years |       | 30–34 years |       | 35–39 years |       | 40–44 years |       | 45–49 years |       | 50–59 years |       |
|---------------|-------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|               |             | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     | N           | %     |
| Underweight   | < 16        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 16–16.99    | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
|               | 17–18.49    | 1           | 2.50  | 3           | 7.14  | 1           | 3.03  | 1           | 2.04  | 0           | 0     | 0           | 0     | 1           | 9.09  |
| Total         |             | 1           | 2.50  | 3           | 7.14  | 1           | 3.03  | 1           | 2.04  | 0           | 0.00  | 0           | 0.00  | 1           | 9.09  |
| Normality     | 18.50–24.99 | 27          | 67.50 | 29          | 69.05 | 18          | 54.55 | 24          | 48.98 | 10          | 35.71 | 3           | 30.00 | 2           | 18.18 |
| Overweight    | 25–29.99    | 9           | 22.50 | 9           | 21.43 | 10          | 30.30 | 22          | 44.90 | 13          | 46.43 | 5           | 50.00 | 6           | 54.55 |
|               | 30–39.99    | 3           | 7.50  | 1           | 2.38  | 4           | 12.12 | 2           | 4.08  | 5           | 17.86 | 2           | 20.00 | 2           | 18.18 |
|               | > 40        | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     | 0           | 0     |
| Total         |             | 12          | 30.00 | 10          | 23.81 | 14          | 42.42 | 24          | 48.98 | 18          | 64.29 | 7           | 70.00 | 8           | 72.73 |
| General total |             | 40          | 100   | 42          | 100   | 33          | 100   | 49          | 100   | 28          | 100   | 10          | 100   | 11          | 100   |

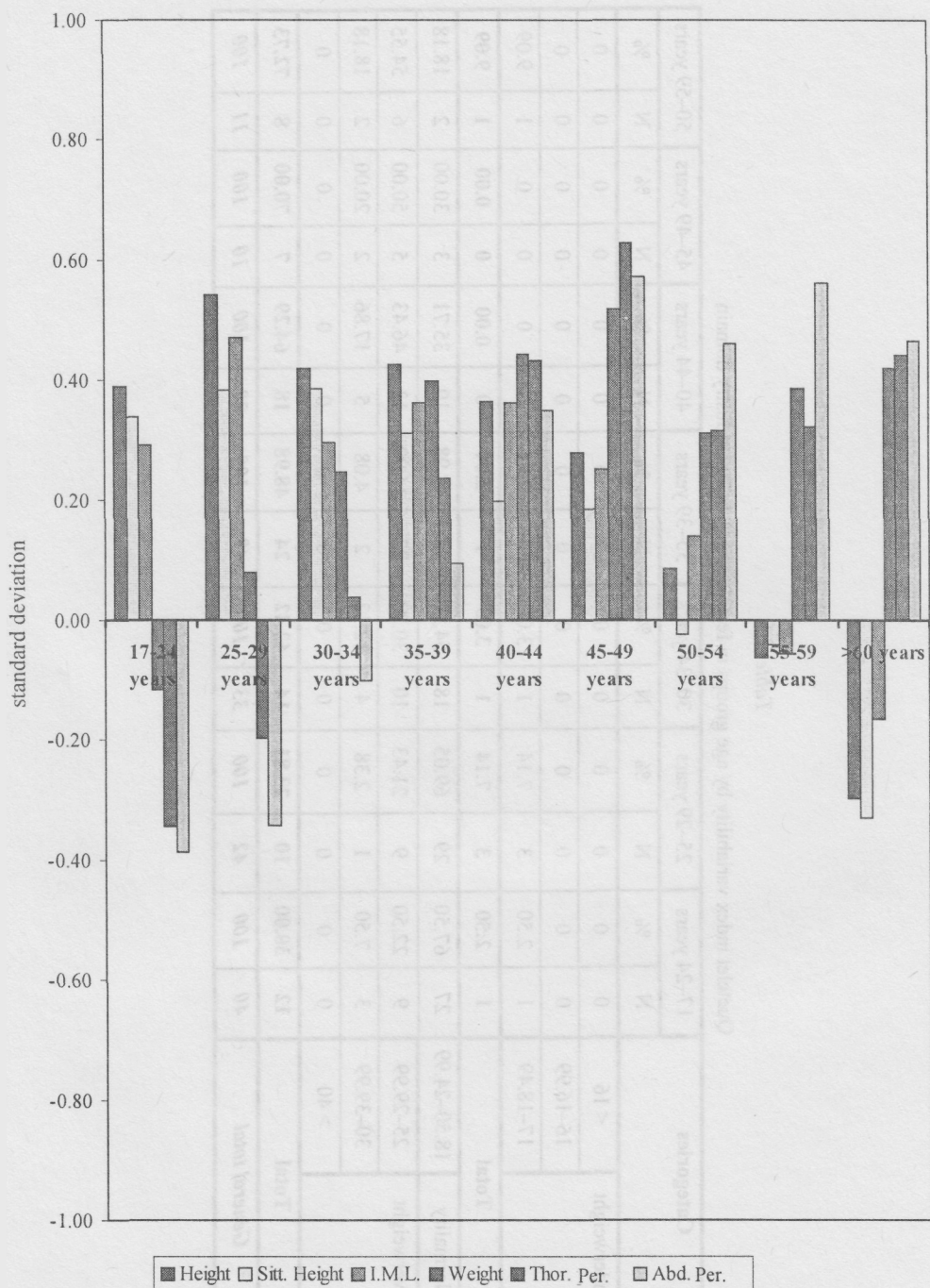


Fig. 9. – Age evolution of the main body mass measures (“Z” normed variables) in male urban population, Romania.

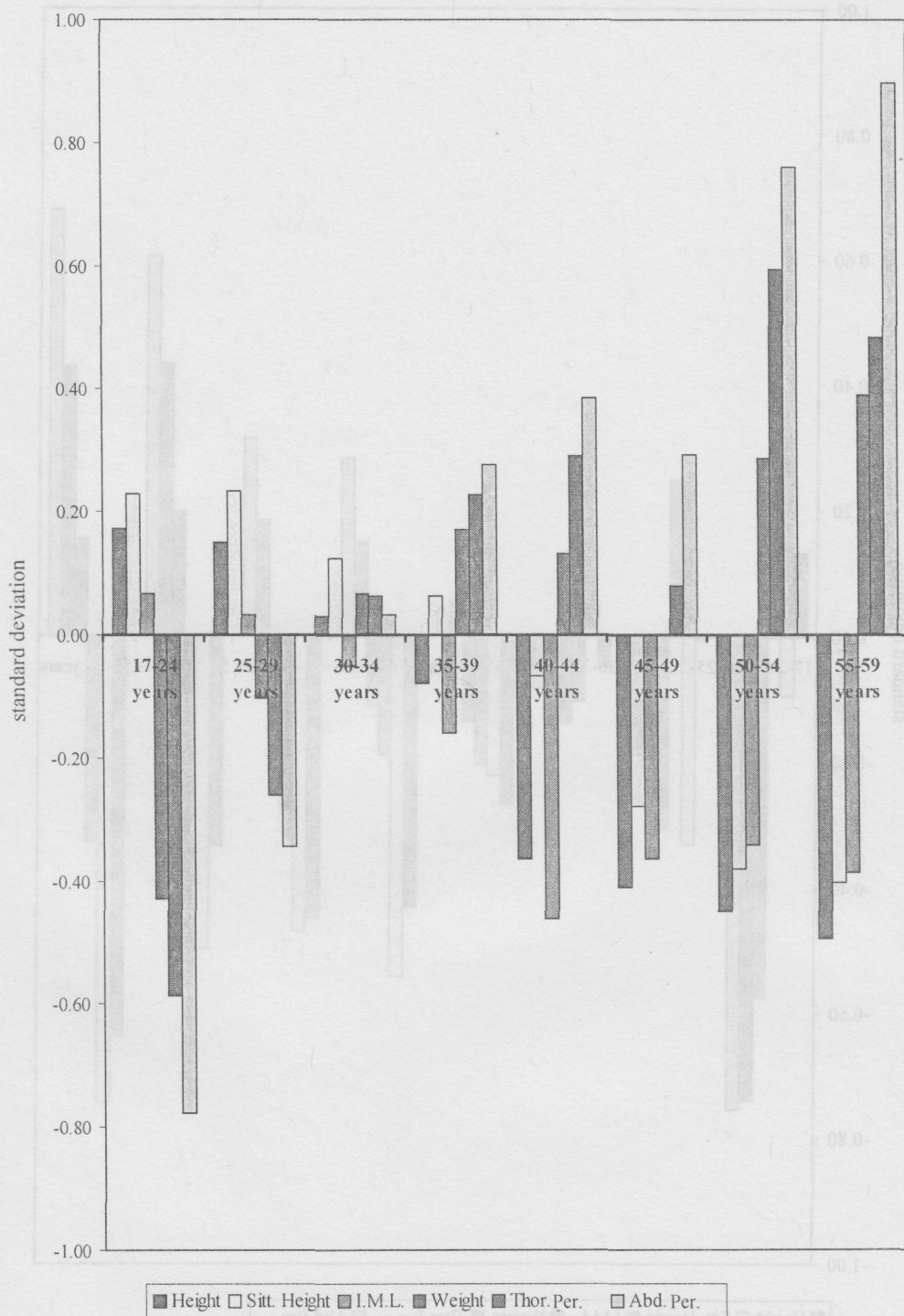


Fig. 10. – Age evolution of the main body mass measures ("Z" normed variables) in male, light industry.

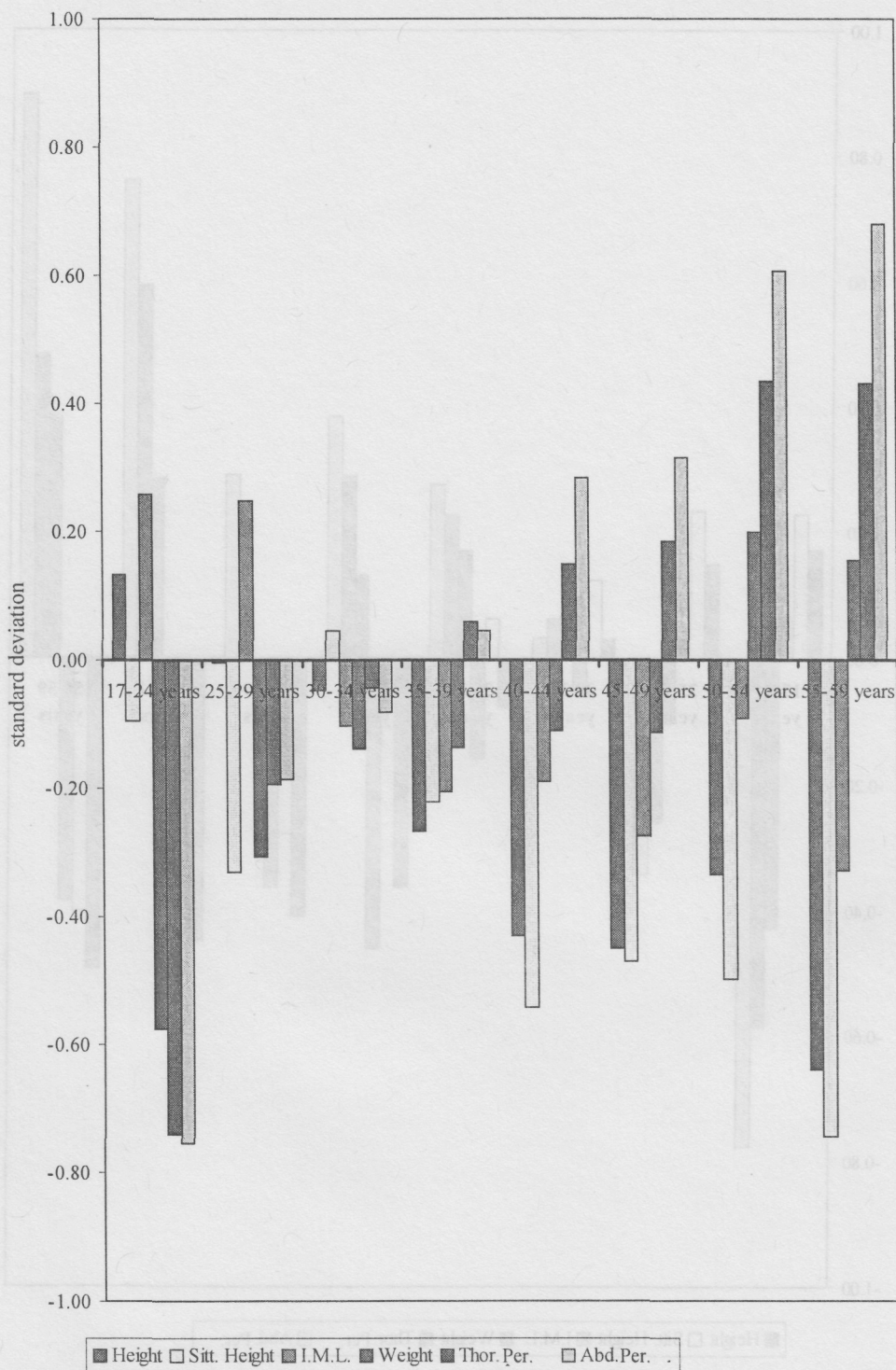


Fig. 11. – Age evolution of the main body mass measures ("Z" normed variables) in male, heavy industry.

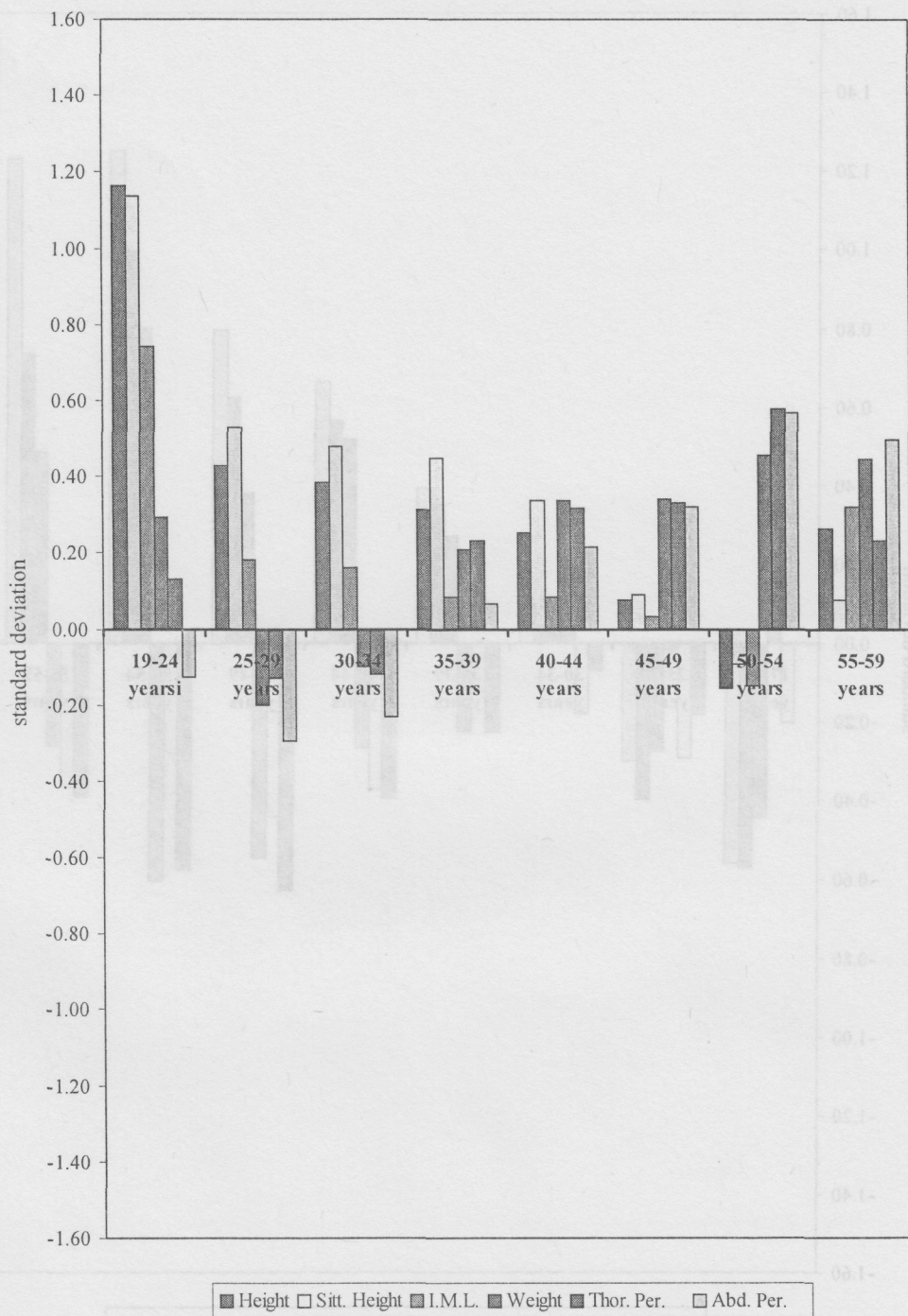


Fig. 12. – Age related evolution of the main body mass measures (“Z” normed variables) in female, research-design domain.



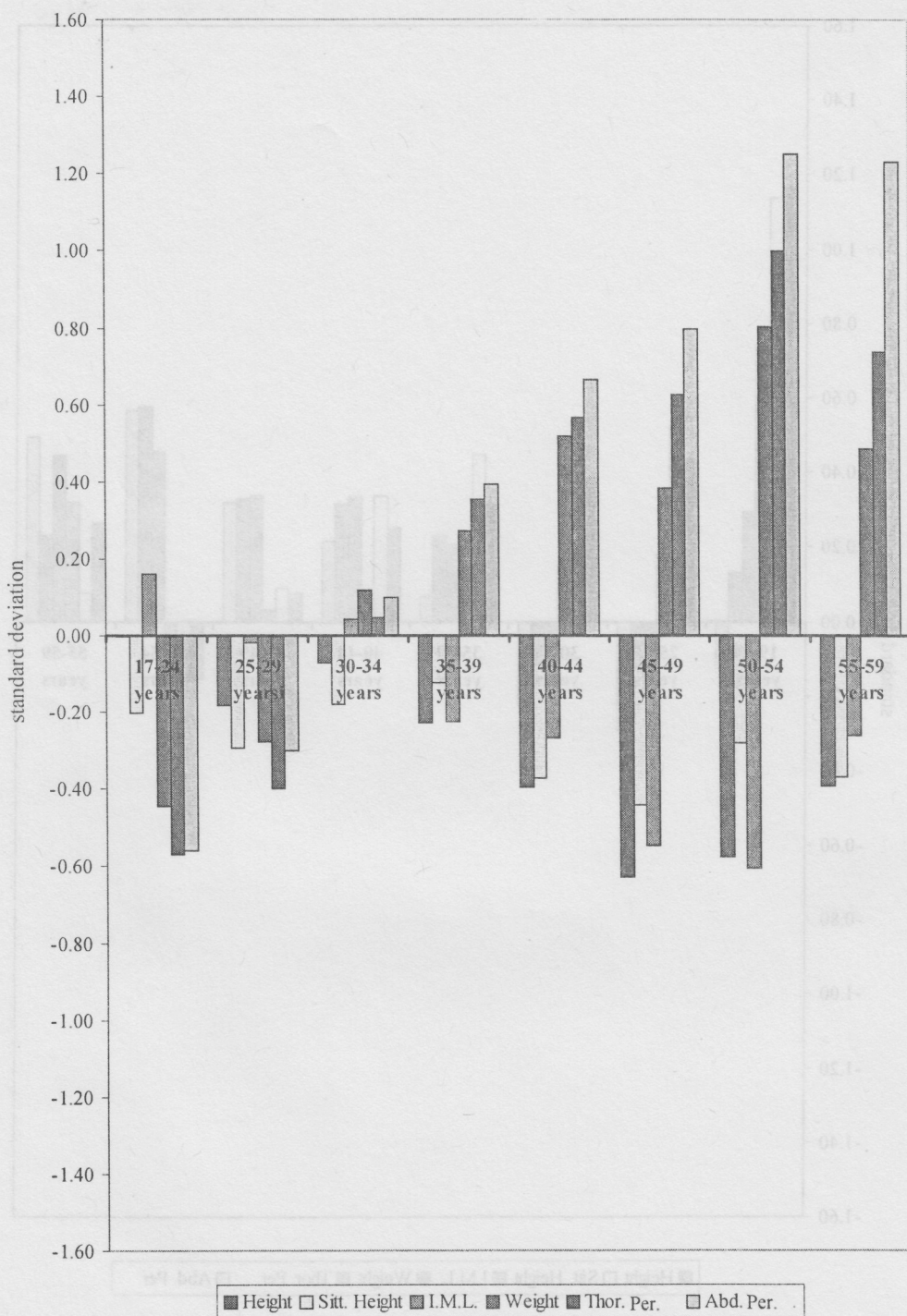


Fig. 13. – Age related evolution of the main body mass measures ("Z" normed variables) in female, light industry.

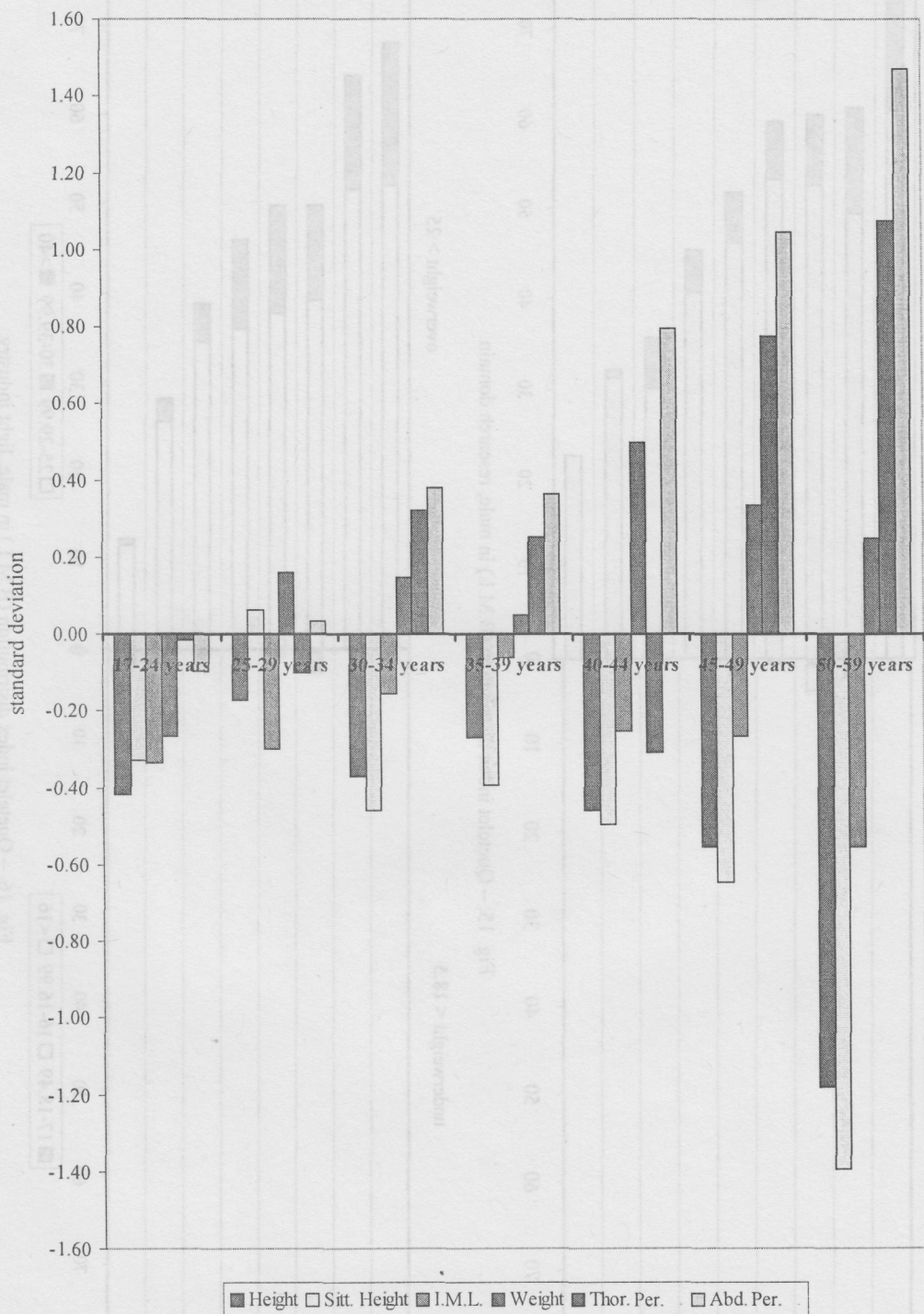


Fig. 14. – Age related evolution of the main body mass measures ("Z" normed variables) in female, heavy industry.

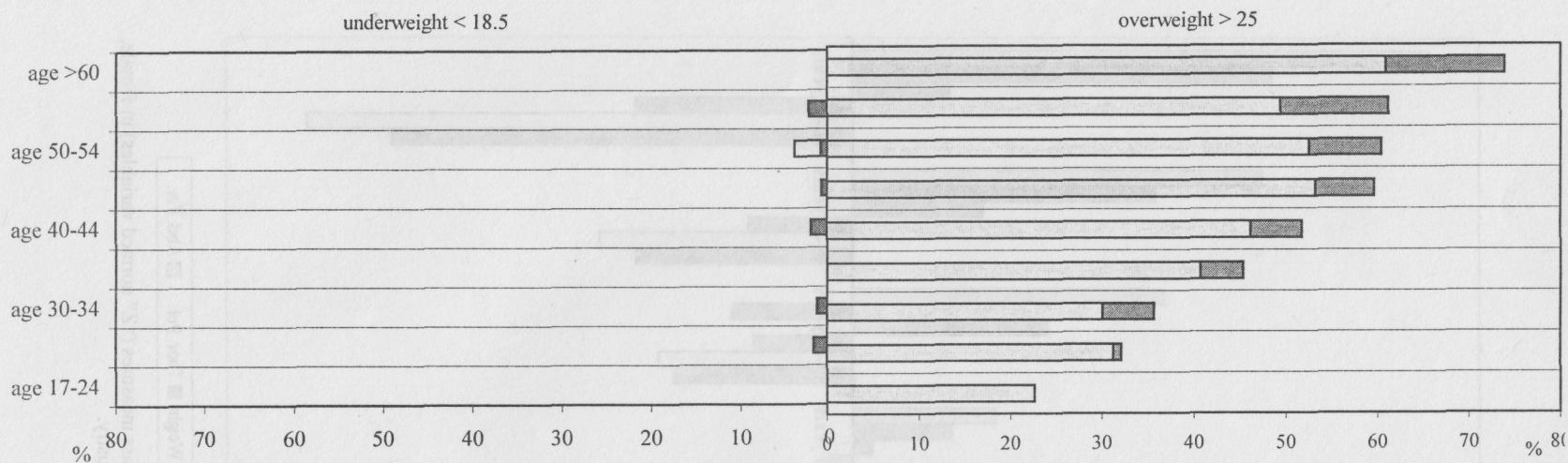


Fig. 15. – Quetelet index distribution (B.M.I.) in male, research domain.

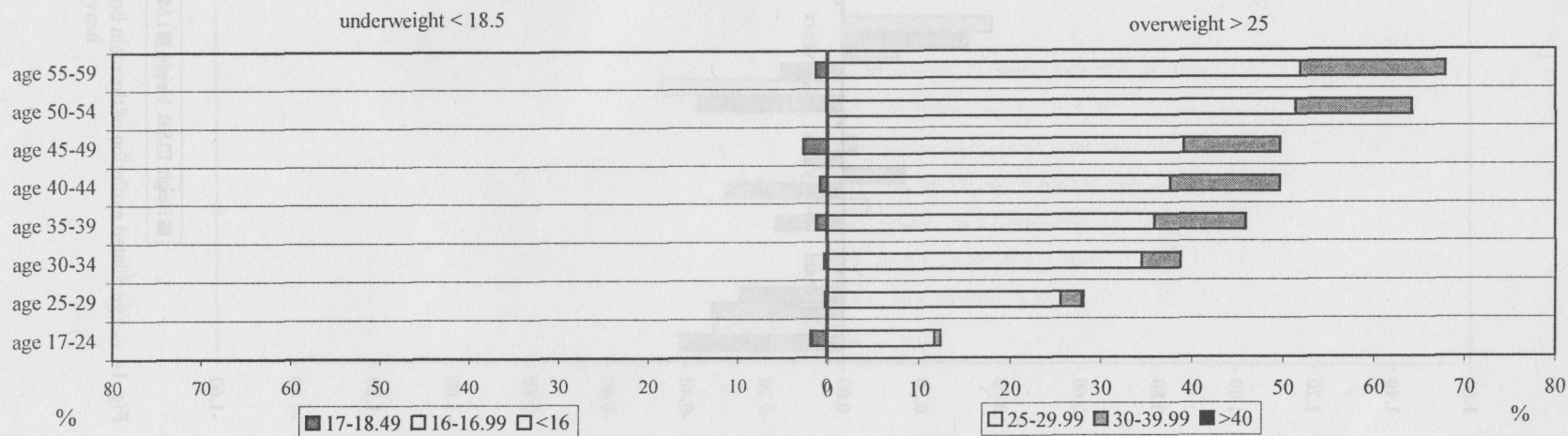


Fig. 16. – Quetelet index distribution (B.M.I.) in male, light industry.



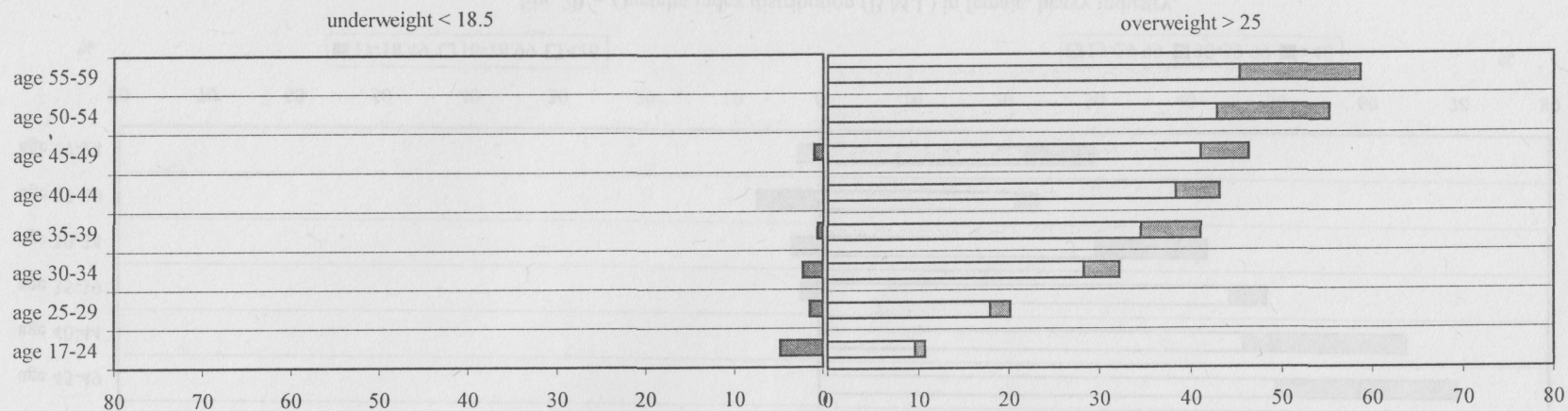


Fig. 17. – Quetelet index distribution (B.M.I.) in male, heavy industry.

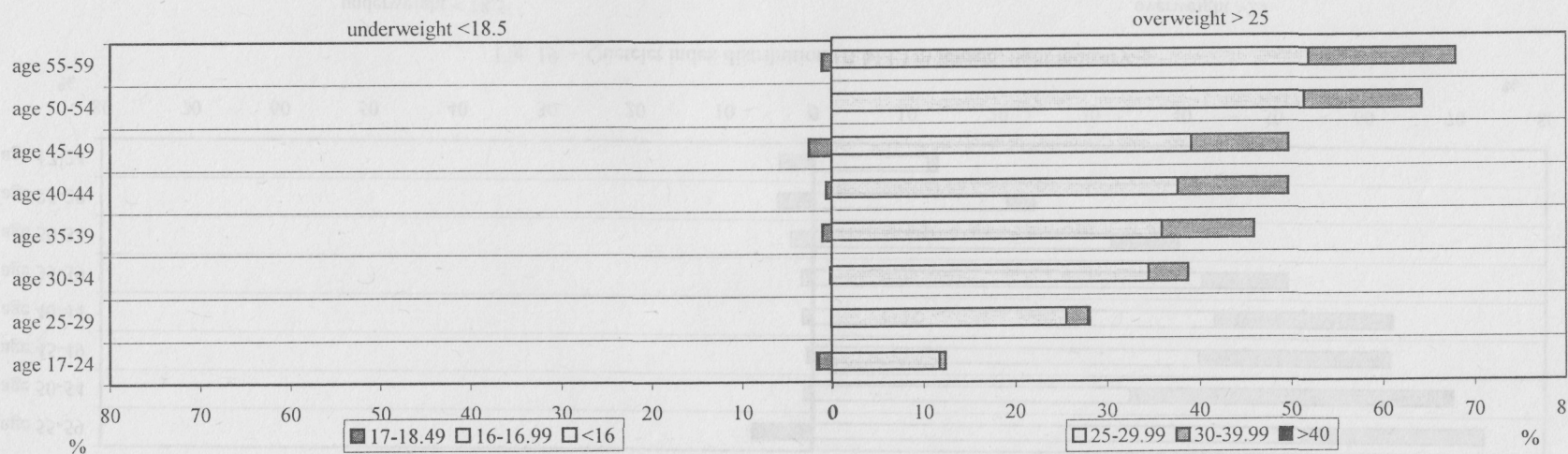


Fig. 18. – Quetelet index distribution (B.M.I.) in female, research domain.

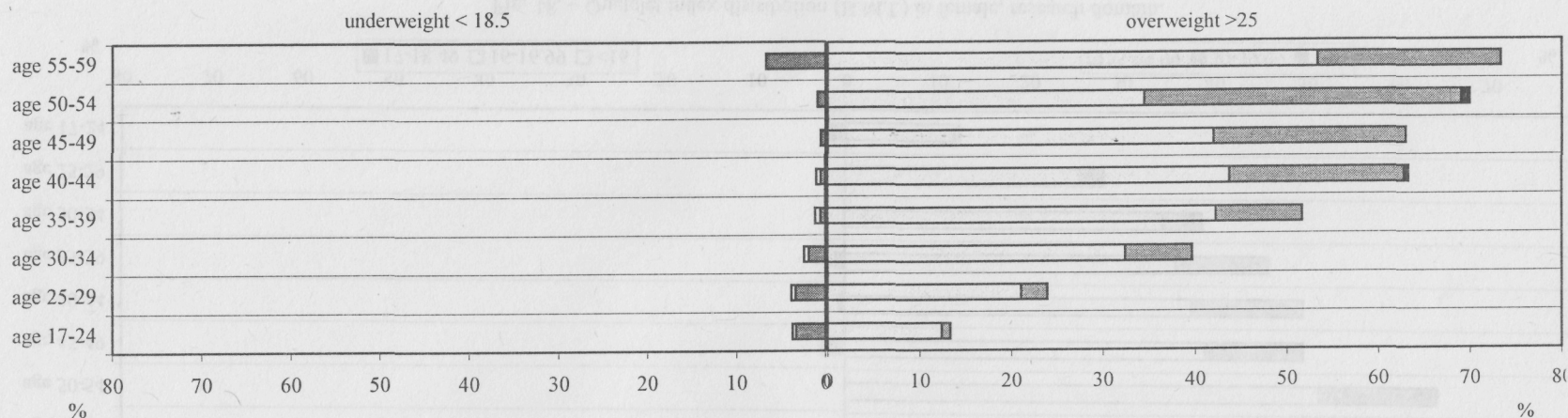


Fig. 19. – Quetelet index distribution (B.M.I.) in female, light industry.

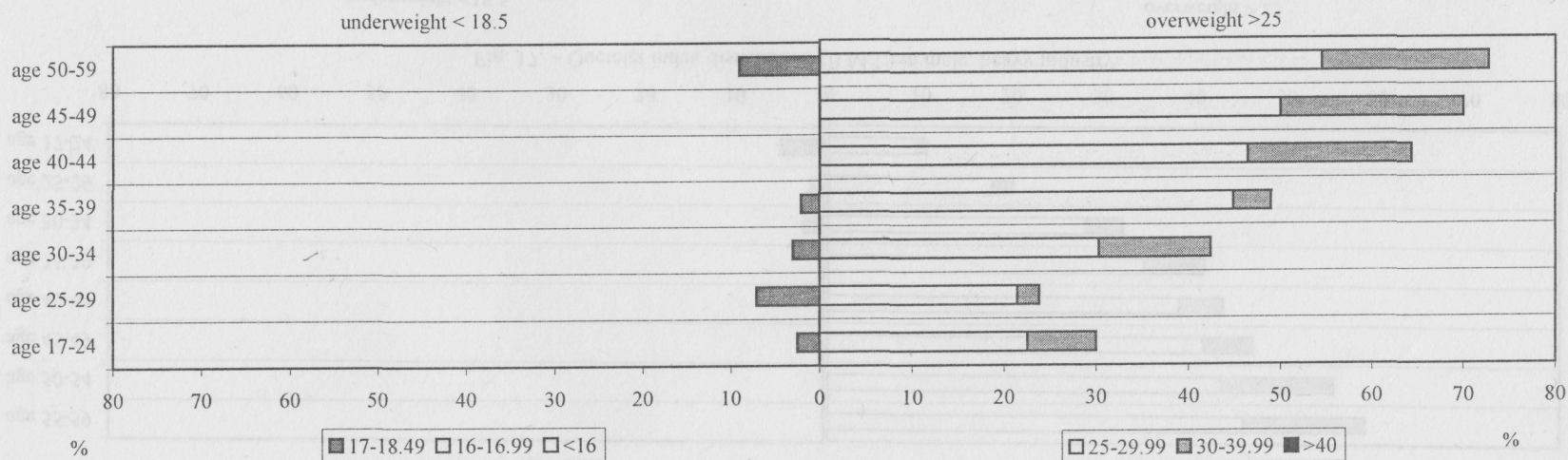


Fig. 20. – Quetelet index distribution (B.M.I.) in female, heavy industry.

The analysis regarding the social-professional variability of the BMI body mass indexes and body mass measures (height, sitting height, weight, thorax and waist perimeters) evidences a certain differentiation:

- in the light industry population, both the male and female series present an overweight frequency around 34.00%;
- the research-design domain presents the highest overweight frequency in males (47.11%) and the lowest in females (30.85%);
- among the heavy industry population, the females present the highest overweight frequency of all the female series (43.66%).

So hard labor is the most difficult for women, who must develop a considerable body mass – this could be a possible explanation. As for men, this assumption has not been confirmed. Paradoxically, in the research-design domain, men present the highest overweight frequency.

A hypothesis that could be submitted refers to the sedentary life of the men working in this field, but in this case the question arises why the fact is not confirmed for the women as well.

As far as the male series is concerned we notice the lowest overweight frequency in the workers from the heavy industry (up to 58.00%), while in the research-design and light industry areas the last age groups present an overweight frequency of over 60.00% (Tables 13, 14 and 15; Figs. 15–20).

As regards the female series, the research-design area has the lowest overweight frequency, between 15.10% and 41.61%, except the age class of 54–54, where it gets to 54.29%; in the light and heavy industry areas, the overweight prevalence begins after the age of 35 and in the last age group it reaches 70.00%.

The different type of requirements in the three work areas, work position and stress are factors that could explain the variability of the body mass indexes, hence the differentiated ages related to overweight predominance.

If we analyze the main body mass measures, we find out that the changes of these measures run in opposite senses, namely the length dimensions decrease especially in the light and heavy industry areas (here the highest decrease is recorded) and the thorax and waist perimeters increase, especially in the light and heavy industry domains, both for the male and female series (Figs. 9–14).

We conclude that there is a vulnerable ground for obesity in our population and this overweight vary according to sex, age, rural/urban residence, geographical area, profession, etc.

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# GEOGRAPHICAL VARIABILITY OF OVERWEIGHT

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The study analyses the predisposition to obesity and proper obesity in geographically differentiated populations from all the main historical provinces of Romania. The data indicate differentiations in the body mass according to geographical location and within it age and sex. From the anthropological viewpoint, among the studied populations, the Dobrogea population presents the strongest tendency of developing obesity and the highest frequency of obesity in a Quetelet index evaluation scale.

## MATERIAL AND METHOD

Our study surveys the rural population in Moldavia, Banat, Transylvania and Dobrogea – including almost 6,190 subjects. We analyzed the variability of some body measures in correlation with the variability of the Quetelet index (BMI), according to sex and age.

## ANALYSIS OF THE RESULTS AND CONCLUSIONS

The variability analysis of the Quetelet body mass index (BMI), in its evaluation scale, points out a series of similarities and differentiations between geographically differentiated populations.

As concerns the *Banat population*, overweight presents a certain sexual differentiation: the male population has a prevalence of overweight of 29.69%, as against the female population with overweight variants of 36.17%.

Within this overweight, we notice a predisposition to obesity (BMI between 25–29.99) of 24.53% in males and of 26.28% in females; ‘proper’ obesity (BMI >30.00) is recorded in an almost double percentage in females (9.89%), in comparison with males (5.16%) (Table 1).

If we analyse the changes with age of the main body measures, we shall find important differentiations between male and female series. (Figs. 1 and 2).

In the male series these changes begin after the age of 40 and are characterized by a slow value decrease of the vertical sizes and a slow increase of weight, waist perimeter and thorax perimeter, situation maintained until the age of 50. After the age of 50, the weight begins to decrease, but also the height and the sitting height; the horizontal sizes, especially the thorax perimeter, begin to increase.

Table 1

Quetelet index variability in Romanian rural population, by geographical area and by sex

| Categories  |            | MALES |       |              |       |          |       |          |       | FEMALES |       |              |       |          |       |          |       |
|-------------|------------|-------|-------|--------------|-------|----------|-------|----------|-------|---------|-------|--------------|-------|----------|-------|----------|-------|
|             |            | Banat |       | Transylvania |       | Moldavia |       | Dobrogea |       | Banat   |       | Transylvania |       | Moldavia |       | Dobrogea |       |
|             |            | N     | %     | N            | %     | N        | %     | N        | %     | N       | %     | N            | %     | N        | %     | N        | %     |
| Underweight | <16        | 0     | 0.00  | 1            | 0.08  | 1        | 0.11  | 0        | 0.00  | 0       | 0.00  | 2            | 0.17  | 0        | 0.00  | 0        | 0.00  |
|             | 16–16.99   | 3     | 0.47  | 2            | 0.16  | 0        | 0.00  | 0        | 0.00  | 4       | 0.62  | 10           | 0.87  | 0        | 0.00  | 1        | 0.26  |
|             | 17–18.49   | 10    | 1.56  | 36           | 2.86  | 12       | 1.29  | 1        | 0.17  | 13      | 2.01  | 40           | 3.49  | 8        | 1.14  | 3        | 0.77  |
| Normality   | 18.5–24.99 | 437   | 68.28 | 950          | 75.52 | 672      | 72.10 | 258      | 44.64 | 396     | 61.21 | 733          | 64.02 | 399      | 57.00 | 155      | 39.64 |
| Overweight  | 25–29.99   | 157   | 24.53 | 238          | 18.92 | 107      | 11.48 | 157      | 27.16 | 170     | 26.28 | 268          | 23.41 | 226      | 32.29 | 149      | 38.11 |
|             | 30–39.99   | 32    | 5.00  | 31           | 2.46  | 40       | 4.29  | 62       | 10.73 | 62      | 9.58  | 86           | 7.51  | 67       | 9.57  | 80       | 20.46 |
|             | >40        | 1     | 0.16  | 0            | 0.00  | 0        | 0.00  | 0        | 0.00  | 2       | 0.31  | 6            | 0.52  | 0        | 0.00  | 3        | 0.77  |

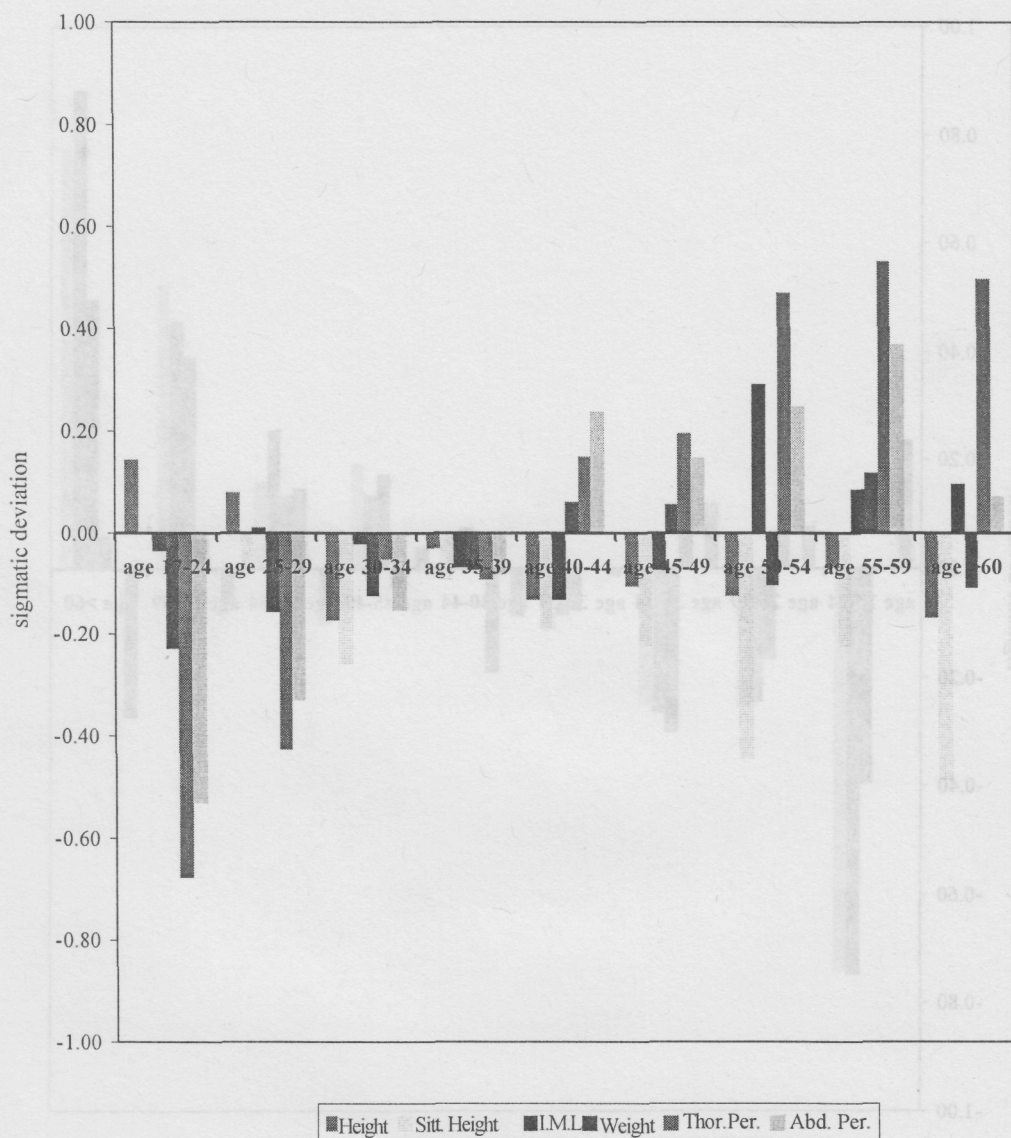


Fig. 1. – Age-related evolution of the main body mass measures (Z standardized variables) in male rural population, Banat.

In the female population, changes in the body mass arise later, above the age of 50, when the weight and especially the thorax and the waist perimeters modify their size.

In the *Transylvania population* we found a prevalence of overweight variants of 21.38% in the female series. What differs is the frequency of obesity, which is 2.46% in males and 8.03% in females.



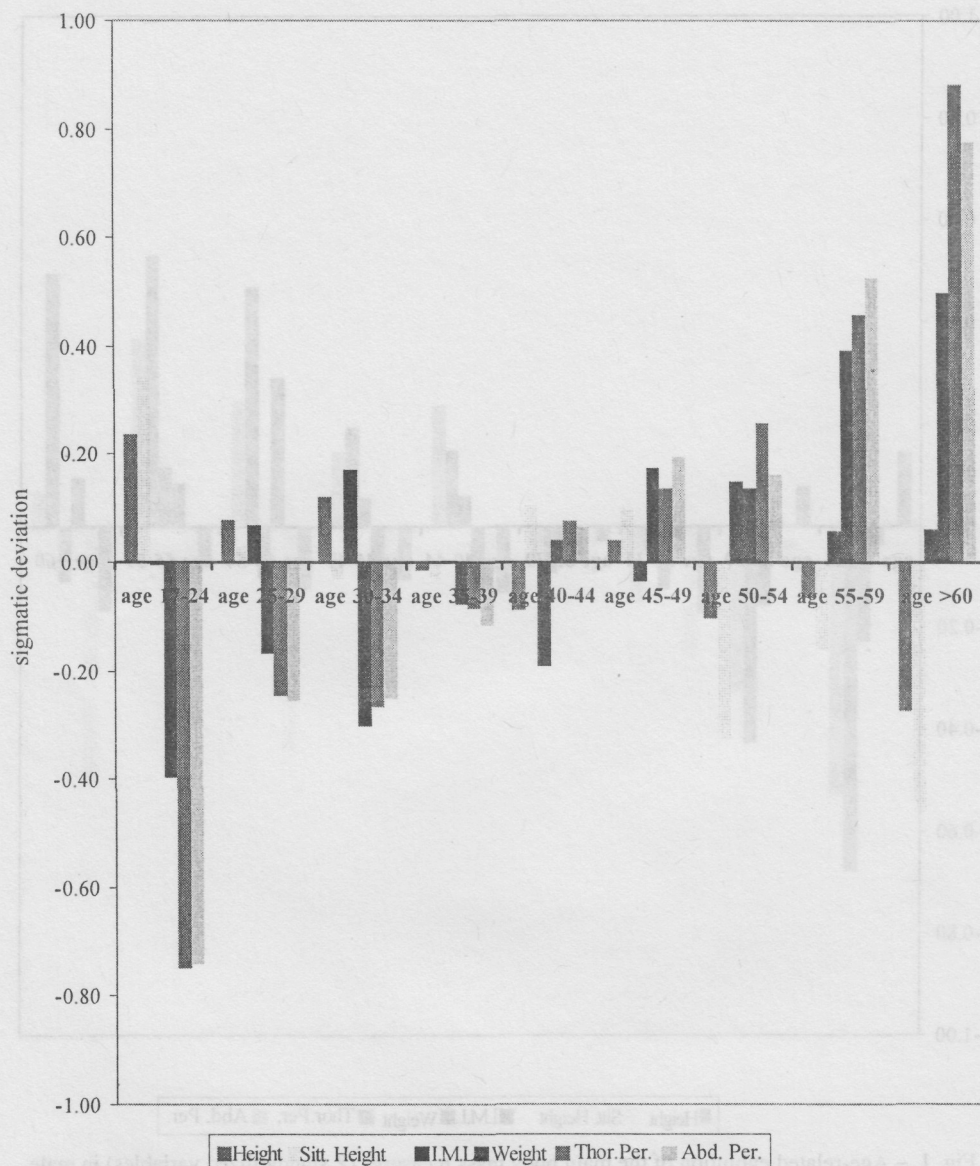


Fig. 2. – Age-related evolution of the main body mass measures (Z standardized variables) in female rural population, Banat.

Regarding the variability of the changes with age of the anthropometrical body dimensions, we record some differences between the two sexes: the male series modifies its body mass sizes beginning with the age of 40, just as the female series. The evolution of these changes after this age is, however, differentiated: males lose gradually from the value of the thorax and waist perimeters (which



remain in the upper positive register of the sigmatic deviations) and especially weight which, after the age of 55, passes into the negative register of the sigmatic deviations (along with the vertical body dimensions).

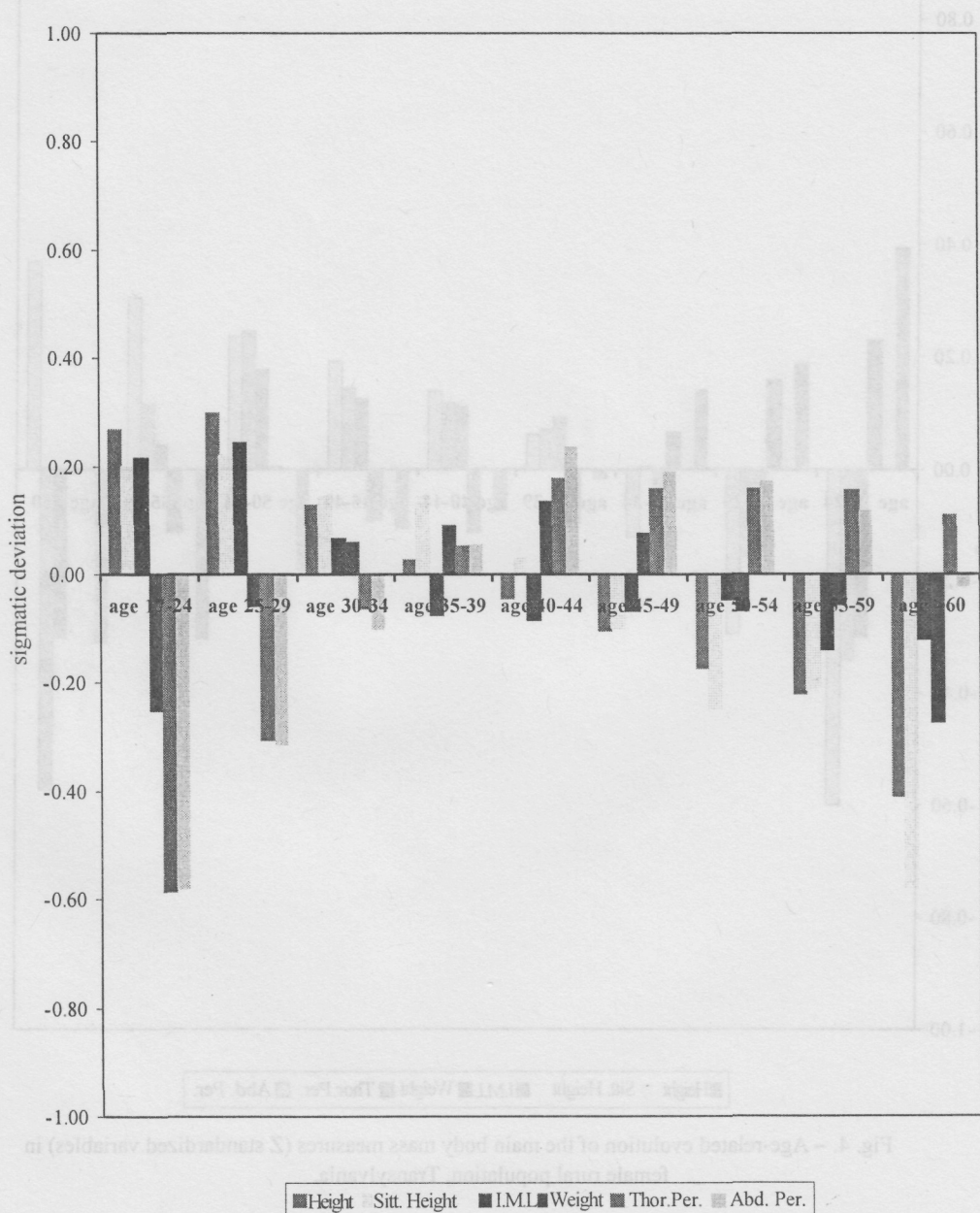


Fig. 3. — Age-related evolution of the main body mass measures (Z standardized variables) in male rural population, Transylvania.

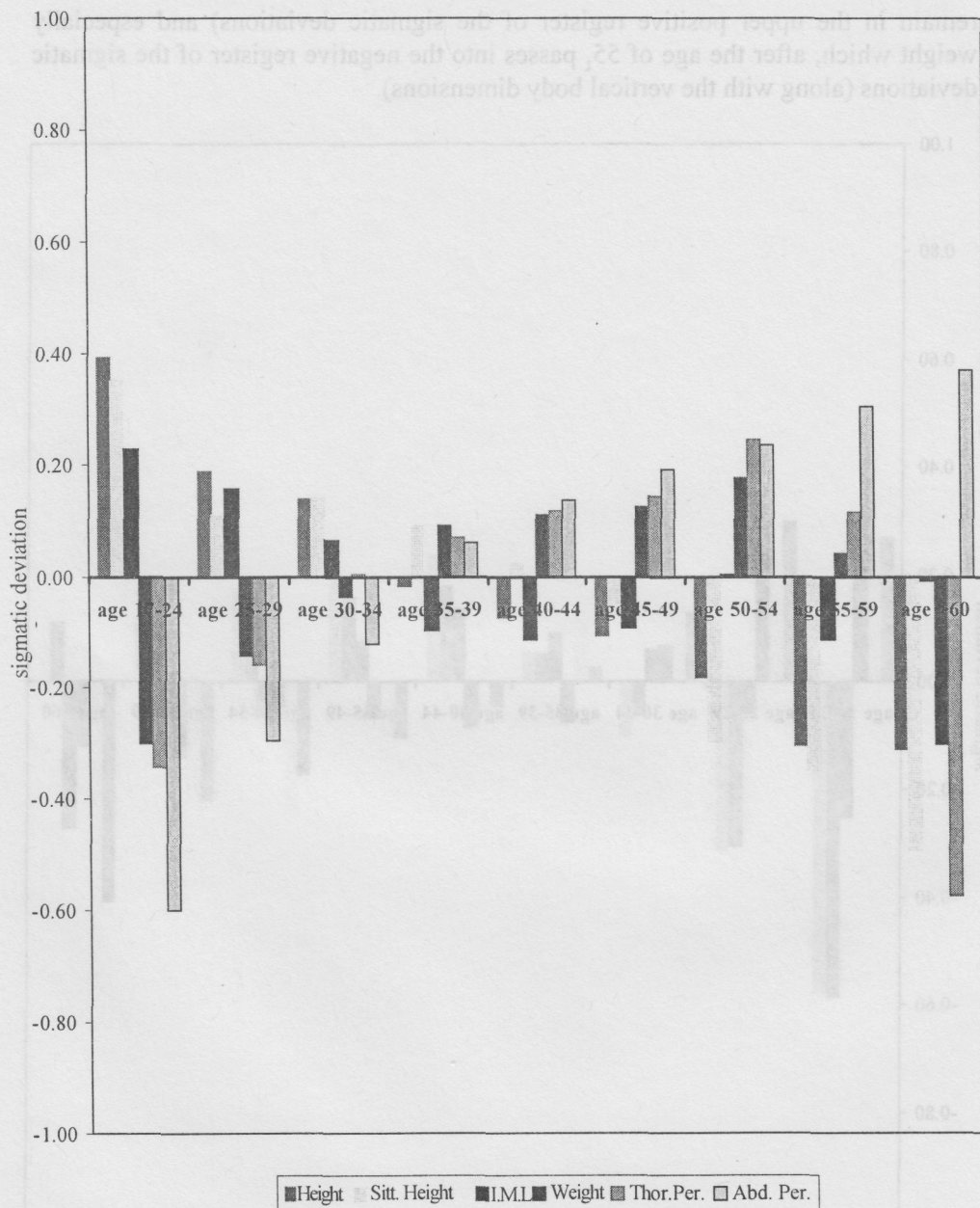


Fig. 4. – Age-related evolution of the main body mass measures (Z standardized variables) in female rural population, Transylvania.

For the female series, after the beginning age of changes in the body sizes (the age of 40), the sole dimension that increases in the upper register of the

sigmatic deviations is the waist perimeter (age of 60), while the thorax perimeter decreases significantly, passing into the lower register of the sigmatic deviations (Figs. 3 and 4).

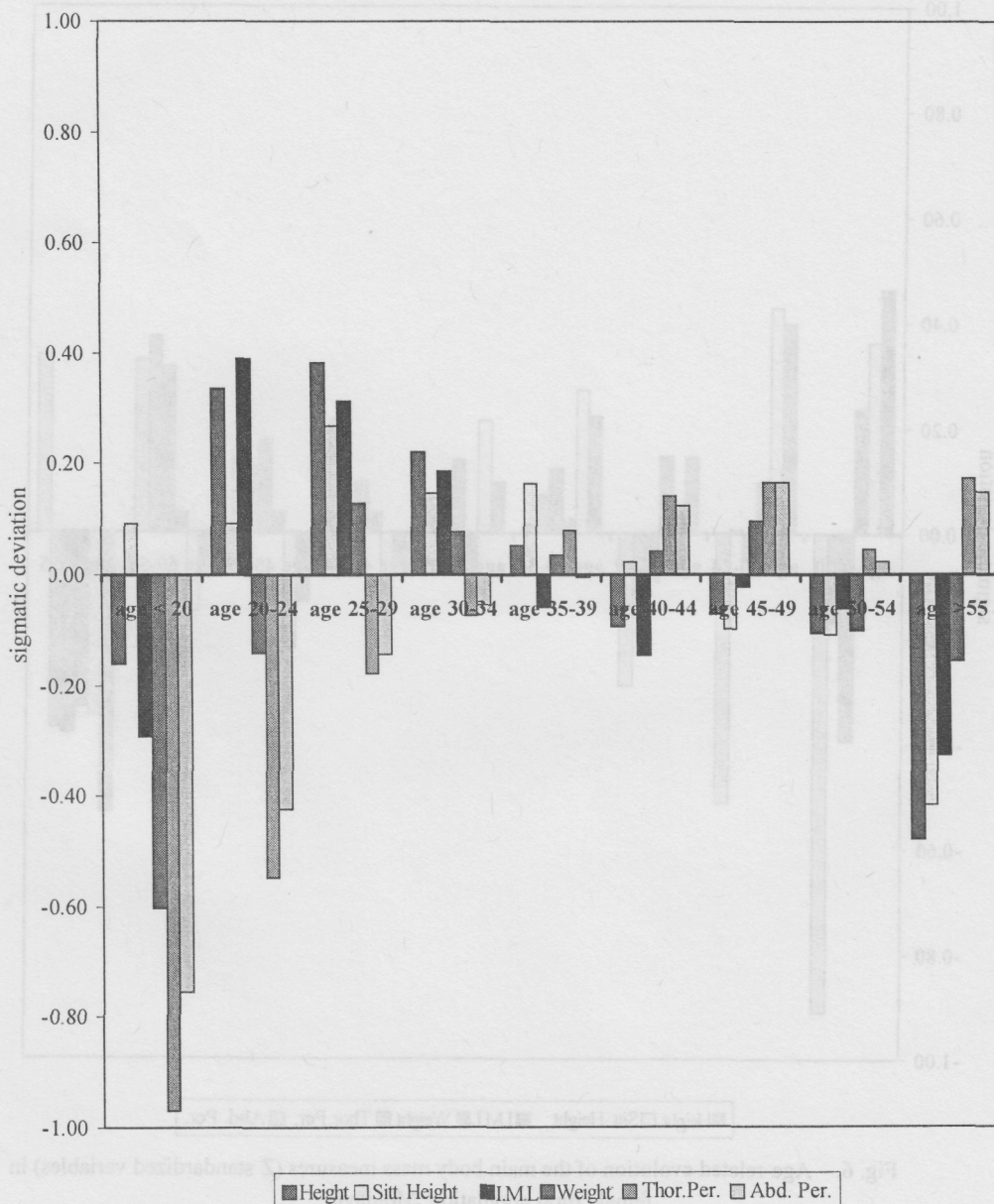


Fig. 5. – Age-related evolution of the main body mass measures (Z standardized variables) in male rural population, Moldavia.

In this population overweight is based on considerable differentiations of the perimeters.

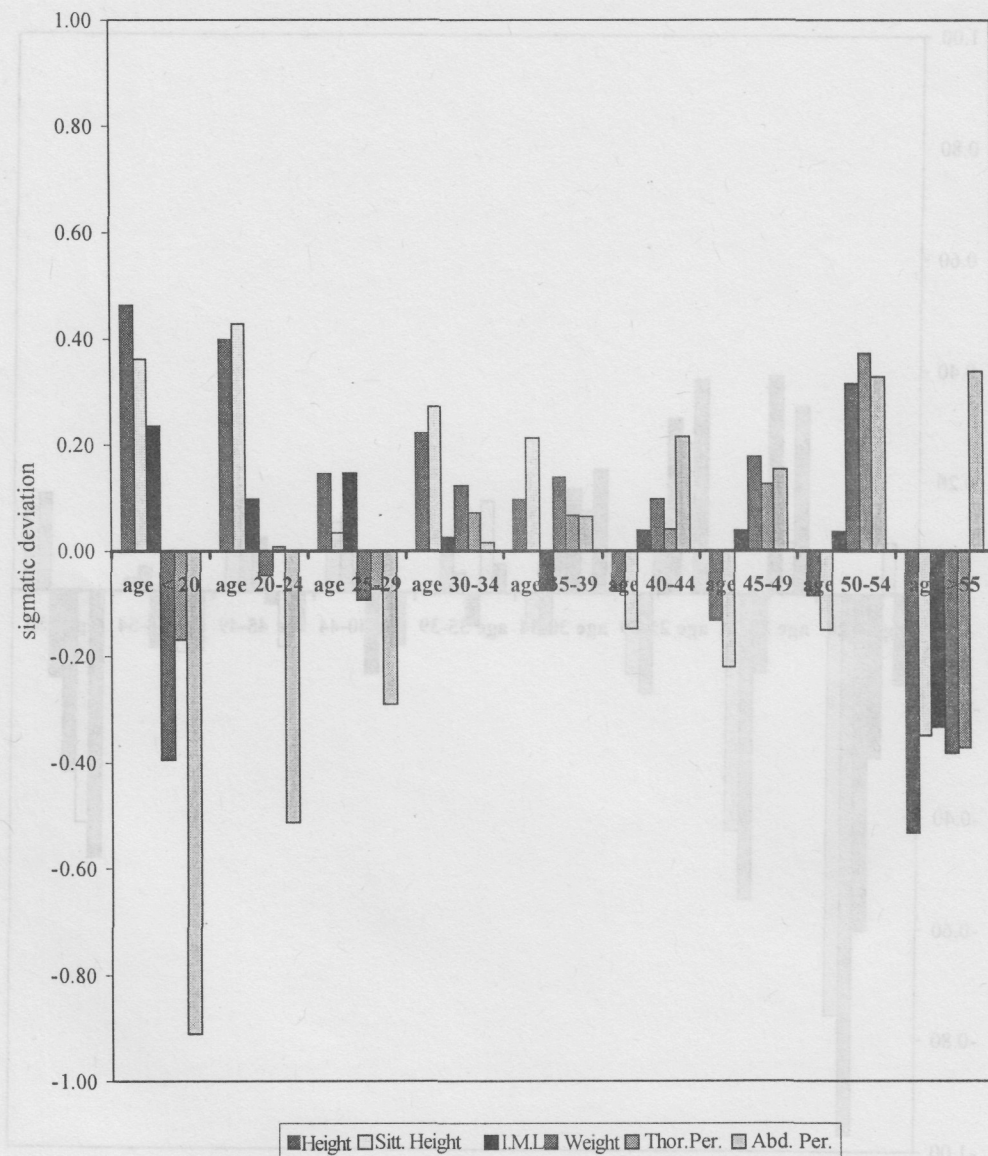


Fig. 6. – Age-related evolution of the main body mass measures (Z standardized variables) in female rural population, Moldavia.

In the *Moldova population* we found a clear differentiation of the overweight variants between the male and female series: 15.77% in comparison with 41.86%.



Within this differentiation, the frequency of the tendency to obesity is threefold in women (32.29%) compared with men (11.48%), and the proper obesity is double in women (9.57% as against 4.29%).

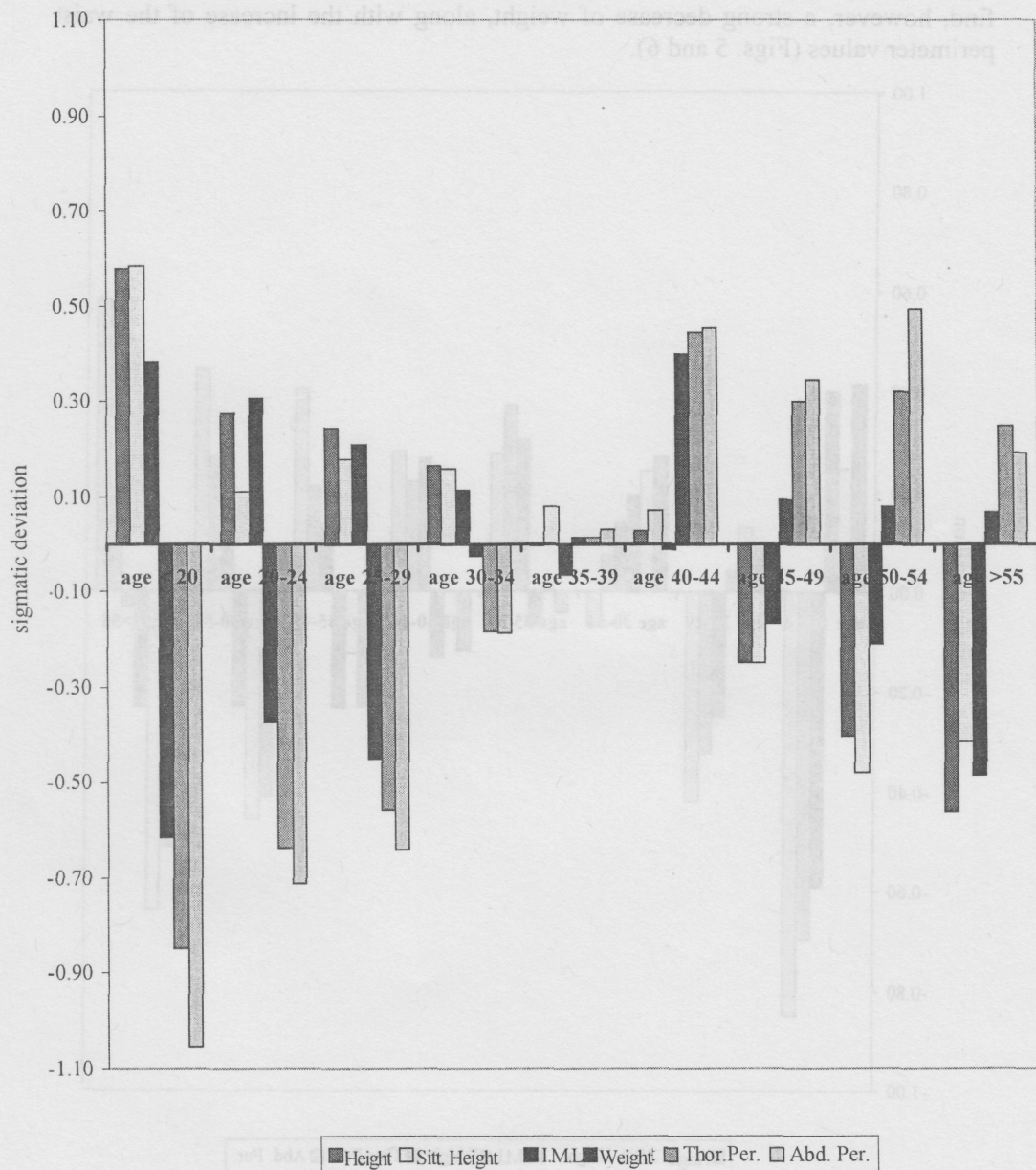


Fig. 7. – Age-related evolution of the main body mass measures (Z standardized variables) in male rural population, Dobrogea.

This differentiation is also confirmed by the evolution with age of the main body mass sizes, where in the male series after the age of 50 we record a decrease of these values: height, sitting height, weight pass into the negative register of the sigmatic deviations; we meet the same situation in the female series, where we find, however, a strong decrease of weight, along with the increase of the waist perimeter values (Figs. 5 and 6).

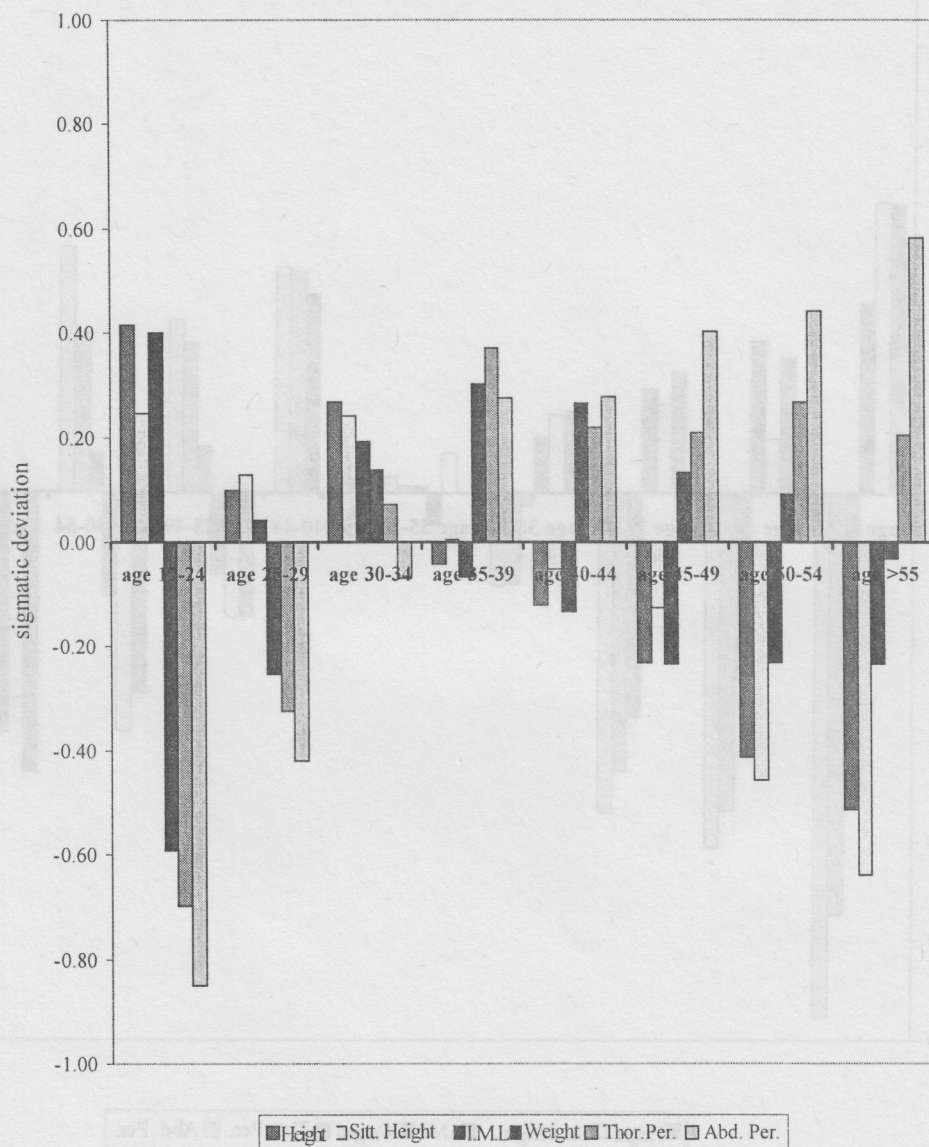


Fig. 8. – Age-related evolution of the main body mass measures (Z standardized variables) in female rural population, Dobrogea.

In the *Dobrogea* population, we register the highest prevalence of overweight: 37.89% in males (out of 27.16% present a “tendency to obesity” and 10.73% show obesity) and 59.34% in females (out of whom 38.11% present a “tendency to obesity” and 21.23% obesity) (Table 1).

The analysis of Figs. 7 and 8 illustrates eloquently both the differentiations between the male and female series with regard to body sizes’ changes with age that sustain the differentiated prevalence of the BMI and the finding that among the analysed populations the Dobrogea one is predisposed to obesity in the highest degree, presenting at the same time the highest frequency of obesity in Romania. For the male series as for the female one, the graphics illustrate the tendency of a dimensional increase of the thorax and waist perimeters and a strong decrease of the average values of the vertical dimensions, resulting from the subsidence of the vertebral column and the collapse of the foot vault, as well.

Our paper highlights the geographical differentiation of the Quetelet body mass index and of the main body sizes and within it the differentiated variability with sex and age – important biological factors in approaching the complex issue of obesity.

But the subject matter of obesity is culturally determined by behavioural factors, as food habits, sedentary life, excess of smoking and alcohol in a population passing through a process of transition, which at the nutritional health level becomes manifest in a “transition-nutrition”.

During the 1980–1989 decade, the population passed through a process of transition because of the massive emigration of the rural population to an industrialized environment, with different cultural patterns.

In order to elaborate coherent strategies concerning nutrition, the priorities and the research fields – which might contribute through short and long-term strategies to an effective management of obesity at a national level – need to be approached, having as a final aim the reduction of the incidence of cardiovascular diseases by means of prevention of obesity. The prevention strategies should promote a controlled consumption of wealthy food, physical exercise, behavioural changes that may reduce the disturbing factors of the nutritional health, beginning in childhood and adolescence.

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# TYPES OF ADAPTATIVE VARIABILITY IN CERTAIN INTRACRANIAL CALCIFICATION PROCESSES (PINEAL GLAND–CHOROID PLEXUS)

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Our study comprises the results obtained by investigating some samples of patients who underwent a computerized tomographic examination (CT) of the choroid plexus and pineal gland at the level of the side ventricles (axial cranium). Our intention was to answer the following questions: why and with whom does the choroid plexus calcify under physiological conditions analysed correlatively with the pineal gland calcification? What are the connections between calcification and associated pathology? We started from the hypothesis that the presence of these calcifications, not diagnosed as pathological (therefore considered as being physiological) plays *an active adaptative metabolic part which depends on a multitude of factors, the individual constitutional ground included*. The sample under study consisted of both sexes and included six intervals of statistically significant ages; the diagnoses were also grouped in other several categories. In order to systematize the calcification variants, we grouped eight types of possible calcification variants sensed by the CT image. After the anthropological statistic study the results demonstrate that there are interesting distributions and significant differences between the calcification of the choroid plexus and the calcification of the pineal gland within the two sexes on age groups and pathological ground. For type 1-totally noncalcified the *maximum* frequency is around 70% with the 19 years old age group. For type 8-totally calcified, bilateral, the *maximum* frequency is around 50% with the age groups of 48–59 and 60–71 years old. For type 4-with calcification only of the choroid plexus we find a continuous rise from about 10% with the first age group up to around 25% with the last group while for type 5-with calcification only of the pineal gland, the frequency oscillates between 10% and 20% at the most.

## INTRODUCTION

In our study we intend to demonstrate the existence of certain intracranial physiological calcification variants (CFI): of the glomus of the choroid plexus (PC) at the level of the temporal or occipital horns of the side ventricles correlated with that of the pineal gland (GP). [3]. These physiological calcifications are highlighted in the computerized tomographic image (ICT) and they *frequently occur in the same cranial*

*axial section* in spite of the fact that the GP and PC have no known direct topographic or anatomic-functional connections; besides, their morphology does not justify calcification placement in the same plane. Our hypothesis refers to the existence of a complex “interface type” interdependence [4], between CFI phenomena in the area under study. These interdependences have metabolic phenomena implied in the hydroelectrolytic, hydromineral and bioelectromagnetic homeostasis of the whole human organism. We therefore had also in view the hypothesis that there is a complex interface “processing” the information which ensures coexistence and dependence among all physiological calcification phenomena in the organism and implicitly among the intracranial ones.

The analyzed calcification phenomenon manifests like a physiological marker and like an adaptative calcification phenomenon, possibly reversible. In the activity of the complex made up by the PC and GP we foreshadow the presence of a (biophysical-chemical) neuroendocrine physiological anthropological typology [9]. In this way highlighting of noncalcification/calcification allots CT investigation a value of functional structural, anthropological diagnosis by establishing the interface type of reactive-adaptative calcification. This leads to new possibilities of interpreting the individual reactive ground: *sanogenic or pathogenic*.

The motivation of our interdisciplinary anthropological-medical approach is understanding the principles, causes and consequences lying at the basis of these physiological calcification phenomena in man's intracranial structures. This refers mainly to the kind of interdependence of the two structures belonging to different structures: PC – a basic component of the haemato-encephalic barrier (BHE), the main access way to the brain of the hydrophilic substances in the blood [5, 13] and GP – a neuroendocrine gland playing the part of a phototransducer-mediator, implied in the fundamental biorhythm light/darkness [8]. We would also like to answer such questions as: which are the communication modalities by which these structures are coordinated in a process of complex interdependences? Does the calcification phenomenon become in this way an exponent of the turning plate activity (interface) of the PC in the haemato-encephalic and neuroendocrine communication? Why, when and who determines calcification at the barrier level?

Calcification may be physiological or pathological [9]. The only locations in the organism where calcification phenomena normally take place are the bones and the teeth.

Calcification is considered to be a physiological process which gets intensified during ontogenesis up to a certain stage of life, after which it may lead to excessive growth of the bone mass.

From an anthropological perspective the interest for the PC is determined by the importance of their role and implication in anthropogenesis and in understanding the transformations undergone by the brain in the leap to humanization. We have focused on the peculiarities of the evolution of the cerebral

ventricular system which may be watched in the human embryogenesis-morpho-functional synthesis of the stages of phylogenesis of man's brain, which also indicate a series of very interesting shape and structure transformations. During the transformations the cavities of the neural tube vesicles become the encephalic ventricular system, the seat of the cephalic-rachidian liquid (LCR), having the PC as specialized interface. At the same time, of great interest are also the metabolic individualizations, which, by means of the calcification phenomenon in man's ontogenesis, lead to physiological differentiations.

Interdisciplinary systematic studies may lead to finding some criteria, principles or general laws according to which the interface phenomena take place. Crossing of the physiological barrier may *be regarded as a natural, real interface having similar characteristics to those in the computer technology* (which receive, encode, memorize, process and retransmit specific information). The calcification we have in view occurs, as mentioned before, as a marker for the homeostatic regulation of the constitutional ground of the organism.

For a better understanding of the peculiarities we further intend to point out a few anatomic and physiological data of the GP and PC.

**Data on the pineal gland.** Anatomically, it is a pine-shaped body, about 12 mm long, placed at the level of ventricle III, above the two fore quadritwin tubercles. By means of a peduncle called habenula, it is connected with the encephalon and together with the other bodies it makes up the epithalamium-epiphysis complex [7, 8].

**Data on the choroid plexus.** The PC are vascular-epithelial structures placed in the cerebral-ventricular system (side ventricles, ventricle III and ventricle IV), resulting from the coalescence of pia mater with the ependyma. The calcified concretions observed at the level of the side ventricles are part of the so-called "brain sand" or corpora arenacea.

Having in view the above information, we further mean to find out the factors determining the PC physiological calcification as well as its part in a specialized, interface-type structure in the human brain, which mediates and controls "the third circulation" in man's organism – LCR [5, 13].

## MATERIALS AND METHODS FOR STUDY

The analyzed materials consisted in computerized tomographic images (ITC) of the cranium, on which we observed the quite frequent presence of certain opaque hyperdense bodies (HD) of several millimeters, of various forms, similar to some osseous structures or confirmed calcifications, which we considered as calcifications of PC – (ITCHDPC). They are placed symmetrically to the left and/or to the right as to the symmetry center of the brain, marked by the presence of the GP.

Table 1

Global structure of the available sample, according to age and sex categories

| No. of patients | Total |        | Age Groups <sup>1)</sup> |       |       |       |     |
|-----------------|-------|--------|--------------------------|-------|-------|-------|-----|
|                 | Sex   | No., % | <=20                     | 21-40 | 41-60 | 61-80 | >80 |
| No.             | F     | 581    | 88                       | 129   | 175   | 160   | 29  |
| %               |       | 45,0   | 15.1 <sup>1)</sup>       | 22.2  | 30.1  | 27.5  | 5.0 |
| No.             | M     | 709    | 143                      | 163   | 193   | 188   | 22  |
| %               |       | 55,0   | 20.2                     | 23.0  | 27.2  | 26.5  | 3.1 |
| <b>TOTAL</b>    | F+M   | 1290   | 231                      | 292   | 368   | 348   | 51  |

<sup>1)</sup> On each line the sum of percentages in the 5 cells corresponding to the age groups is 100%.

The sample under analysis consists of four lots. In Table 1 we wrote only its global values which we will need in the analysis of the following data.

The lots totally consist of 1,290 patients with ages between 1 and 91 years old, of both sexes. Age categories 1, 2 and 3 (out of 10, 20 or 30 years old), each having specific anthropological relevance, were included in the age groups calculated by means of statistic criteria, which have a greater demonstrative value at this stage of analysis in the present study. As a peculiarity of the sample one may observe that the male percentage is by 10% higher than that of the female and the distribution according to age is quite balanced except for the last group, while with female it is slightly rising.

The patients come from three emergency departments and a surgery specialized in endocrinology and were also diagnosed on the basis of the CT investigation. According to their diagnosis at hospitalization, we grouped them in six categories: cranial-cerebral traumatism (TCC), neurologic diseases (N), endocrine diseases (E), intracranial expansive processes (PEIC), cerebral vascular accident (AVC) and other various diagnoses (OTHERS). Within the framework of an anthropological approach, we considered the variants of the state of illness or health as part of the *human variability*, which, in a general anthropological acceptance, implies the *types of the anthropological constitutional ground* (with sanogenic or pathogenic idiosyncrasy). When examining the results, we considered the TCC category as a possible reference lot for the states of health (apparent, relative), therefore a mirror of the sample *versus* the types of pathological ground represented by the other categories of illnesses we had in view.

The following reserch methods and methodologies were used:

**The computerized tomographic investigation** was made with a Computer Tomograph General Electric CT-Pace-Technic.

**Analysis of the CT images.** The physiological calcification phenomenon (specifically structured deposits) in the GP and PC presents the theoretical variants shown in Table 2 highlighted by computerized tomographic images (ITC).

Table 2

Types of calcification of the choroid plexus correlated with the calcification of the pineal gland

| Kind of structure:<br>Noncalcified (nn) /<br>Calcified (yy) | Pineal gland      |                    |      |      |                |      |      |      |
|-------------------------------------------------------------|-------------------|--------------------|------|------|----------------|------|------|------|
|                                                             | Noncalcified (n.) |                    |      |      | Calcified (y.) |      |      |      |
| Choroid Plexus                                              | n.nn              | n_yn <sup>1)</sup> | n.ny | n.yy | y.nn           | y_yn | y.ny | y.yy |
| Left Right                                                  | 1                 | 2                  | 3    | 4    | 5              | 6    | 7    | 8    |

<sup>1)</sup> n\_yn (type 2 means noncalcified pineal gland, left choroid plexus calcified, right choroid plexus noncalcified).

In order to follow our analysis more easily we would like to specify the following: out of the eight types 1,...8, two refer to extreme variants: type 1-totally noncalcified and type 8-totally calcified; other two refer to symmetrical (bilateral) variants – 4 and 5; the other four consist of asymmetrical calcification variants – 2, 3, 6 and 7. These variants will be further taken into account when discussing and interpreting the results of the present study.

**The statistic analysis** of the interdependences between PC calcification, sex, age and diagnosis was made using the “logit” variant of the log-linear model [1,3].

Each patient is described in the data base by the following seven variables: age, sex, lot (the medical unit the patient comes from), diagnosis, characterization of the TC image of the pineal gland (calcified or not), characterization of the CT image of the left, respectively right choroid plexus (calcified or not).

## RESULTS AND DISCUSSIONS

We will further mention briefly the main results and conclusions referring to the physiological calcification of the GP and specify that:

- The frequency rate of the GP calcifications increases significantly with age in the interval 1–47 years old, the further values do not differ significantly in statistics and are higher for male comparatively with female.
- Regardless the diagnosis, for ages under 19 years old the frequency of the GP calcification is lower than the frequency of the noncalcification absence.
- The maximum calcification frequencies in the category “middle ages” suggest the result that the *GP calcification is physiological* (correlated with the

calcification of the osseous system) and that *its calcification is a marker of certain diseases that make a selection at "the third age"*.

- We should keep in mind that the frequency of the calcification phenomenon has a maximum of the increasing rate up to about 40 years old and a slight tendency to decrease with age.

All these facts corroborate in our opinion our hypothesis and we think that this phenomenon marks *the presence of a physiological metabolic differentiation, very probably implicated in calcium homeostasis for at least two variants of complementary activities: calcification/noncalcification of the human organism.*

A similar study carried out on the PC calcification and their correlations with that of the GP, regarded as *physiologically "associated" phenomena in an interface*, brings additional information and results regarding the various metabolic variants of intracranial calcification.

**The study of the choroid plexus calcification (Table 3). *Observations and comments.*** The distribution of the calcification types of the PC differ significantly in the four lots; the frequency of the bilateral noncalcifications – nn is on an average of 38%, and that of the bilateral calcifications – yy is of 51%. The frequency of calcifications yy is much higher with lots L3 and L4 with dominantly endocrine

Table 3

Frequency of the calcification types of the choroid plexus in the four lots, irrespective of sex, age and diagnosis

| Calcif. Choroid Plexus | No. of patients % | Study Lots        |      |      |      | Total  |
|------------------------|-------------------|-------------------|------|------|------|--------|
| Left Right             |                   | L1                | L2   | L3   | L4   | No., % |
| nn                     | No.               | 184 <sup>2)</sup> | 104  | 39   | 164  | 491    |
|                        | %                 | 41.3              | 35.5 | 22.2 | 43.6 | 38.1   |
| ny <sup>1)</sup>       | No.               | 30                | 33   | 13   | 2    | 78     |
|                        | %                 | 6.7               | 11.3 | 7.4  | 0.5  | 6.0    |
| yn                     | No.               | 29                | 24   | 12   |      | 65     |
|                        | %                 | 6.5               | 8.2  | 6.8  |      | 5.0    |
| yy                     | No.               | 202               | 132  | 112  | 210  | 656    |
|                        | %                 | 45.4              | 45.1 | 63.6 | 55.9 | 50.9   |
| Total                  | No.               | 445               | 293  | 176  | 376  | 1290   |

<sup>1)</sup> ny means noncalcified left choroid plexus and calcified right choroid plexus.

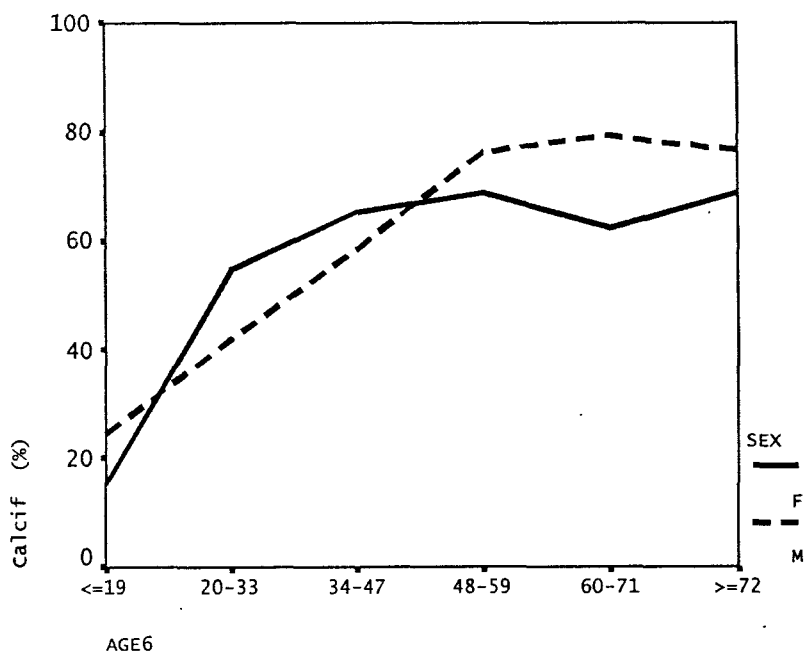
<sup>2)</sup> Example: in lot L1, 184 patients have PC = nn meaning that both choroid plexus Left Right are noncalcified.

pathogeny (E) and neurological pathogeny (N), respectively; in each of the four lots the frequencies of the unilateral calcifications (left asymmetrical calcification yn

and right ny, respectively) show values below 10% except lot L2, with TCC dominant diagnosis, where the value exceeds 11%. Therefore, we could interpret that by the bilateral or unilateral disposition a way was formed to the adaptative variability of the calcification modalities with various increasing rates.

*We will insist no further in our analysis on asymmetries, as due to the reduced number of unilateral calcifications (143 cases) the possibilities to carry out solid statistic analyses for the asymmetrical case are limited.*

**Log-linear analysis for the symmetrical case – both PC yy calcified, both PC nn noncalcified.** In order to study, in the symmetrical case, the factors on which the PC calcifications depend, we appealed to a general log-linear model [1]. The analysis was made taking into consideration 89% of the data base, as specified above, corresponding exclusively to the symmetrical cases yy and nn. We will no longer refer to the theoretical details on the considered model. We will mention only the conclusions.

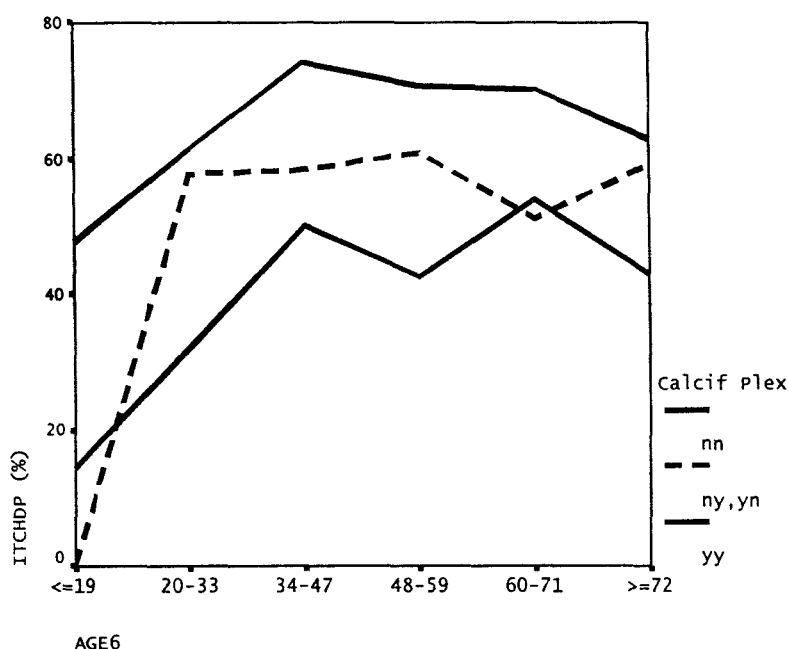


Graph 1. – Frequency of the choroid plexus bilateral calcifications, according to sex and age groups.

The simultaneous analysis of the dependences between lots, age, sex and the PC calcification in the yy-nn case allowed the identification of the following significant interactions: 1. age, sex, lot; 2. PC bilateral calcification, sex; 3. PC bilateral calcification, age. 4. PC bilateral calcification, lot. The interpretation of the dependences (D) is the following: D-1. The structure in respect to sex and age of the

four lots is different (regardless PC calcification). Additionally, sex and age depend on each other: age for female F is significantly higher than age for male M. **D-2.** PC calcification and sex depend on each other and are conditioned according to the lot and patients' age – Graph 1. **D-3.** Irrespective of lot and sex, the frequency of the PC calcifications depends on age – Graph 1. **D-4.** irrespective of the patients' sex and age the frequency of the bilateral calcifications differs significantly with each lot. The explanation is that the four medical units which sent the patients have different specializations (the diagnosis distribution is different).

**Graph 1. Observations and comments.** The frequency of the bilateral calcifications of the PC increases with age up to around 60 years old. After this age the incidence of PC calcifications is relatively constant; in the case of our samples *the percentage of the PC calcifications for the patients with ages over 60 is around 80% for men and 60% for women. This difference is statistically significant for the age category of 60–71 years old.*



<sup>1)</sup> ny = noncalcified left choroid plexus calcified right plexus; yy = both plexus (right and left) calcified; nn = both plexus noncalcified; yn: left plexus calcified, right plexus noncalcified; ny = right plexus noncalcified, left plexus calcified.

<sup>2)</sup> Example: for the age category of 34–47, the frequencies of the pineal calcification are of approximately 50% for 'nn', 58% for ny, yn (i.e. unilateral calcification of choroid plexus) and 75% for 'yy'.

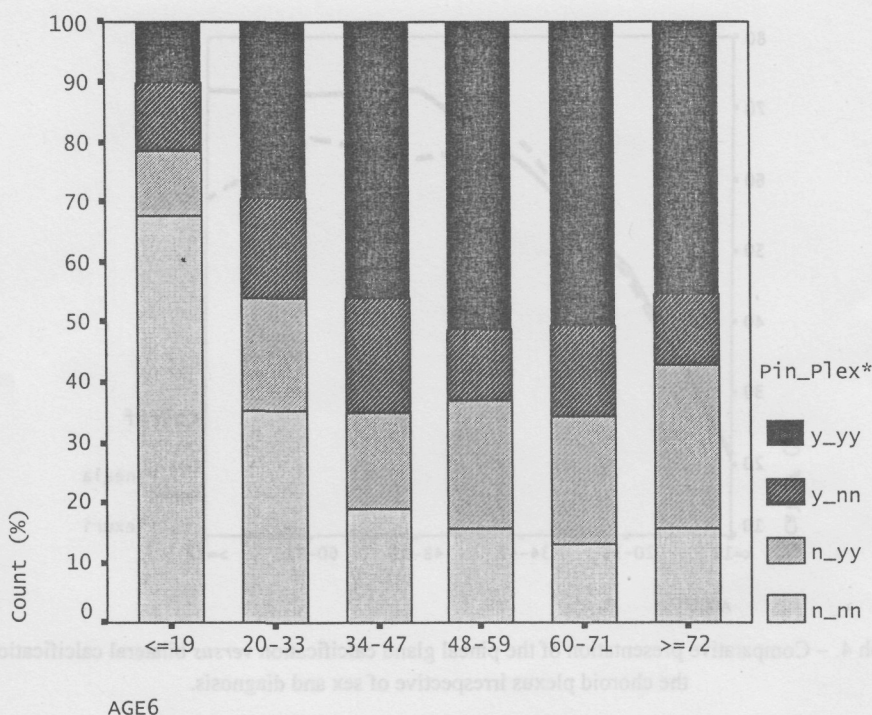
<sup>3)</sup> (%) ITCHDP (hyper-dense tomographic image of the pineal gland) = calcification of the pineal gland.

Graph 2. – Frequency of the calcification of the pineal gland according to age groups (comparative presentation with the calcification types<sup>1)</sup> of the choroid plexus)<sup>2)</sup>.



**Calcification frequencies of choroid plexus correlated with those of the pineal gland.**

**Graph 2. Observations and comments.** It is worth mentioning the association of the GP and PC calcification for the same individual. The frequency of the GP calcification is minimum for the absence PC calcification – nn (below 20%) and maximum for the bilateral calcification – yy (around 70%); for those with calcified GP the frequency of the PC calcification on age categories, presented comparatively, shows that it is lower for noncalcification (bottom line), followed by those with unilateral calcification (dotted line) and ranges between 50% and 75% for bilateral calcification (upper line).



Graph 3. – Distribution of the typology “Bilateral calcification of the choroid plexus – calcification of the pineal gland”, on age groups (100% = total number of patients in the respective age category).

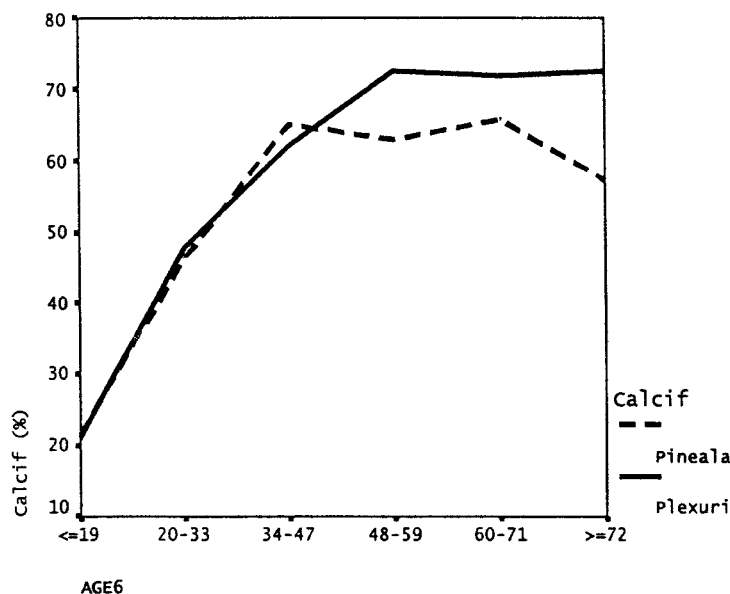
**Analysis of the association types of the pineal gland calcification – choroids plexus (Pin\_Plex).**

**Graph 3.** The patients with unilateral calcification of the PC were excluded from the analysis (in our case they stand for 11%).

The four calcification types are defined as follows: y\_yy = GP calcification and PC bilateral calcification; y\_nn = GP calcification and absence of PC

calcification; n\_yy = absence of GP calcification and bilateral PC calcification; n\_nn = absence of both GP and PC calcification.

**Observations and comments.** Following the succession of the columns corresponding to the four types of calcifications, along the age axes, we observe that: the general calcification process of the assembly of the PC-GP intracranial structures increases up to the age of 60; the frequency of the bilateral calcification type (symmetrical) – y\_yy also increases up to approximately the age of 60; the frequency of category n\_yy does not suggest a certain ordered variation tendency; the frequency of the totally noncalcified category n\_nn decreases up to 70 years old and has a slight increase for the category over 72 years old!



Graph 4. – Comparative presentation of the pineal gland calcification *versus* bilateral calcification of the choroid plexus irrespective of sex and diagnosis.

**Graph 4. Observations and comments.** The frequencies of the GP and PC calcifications are approximately equal up to around the age of 50 and over; the frequency of the GP calcification is approximately constant; the frequency of the PC bilateral calcification increases up to 60, and over this age it is approximately constant (!), as shown in Graph 1.

**Observations and comments.** Table 4 offers a synthetic statistic image of the interface phenomenon under study. One may analyse in detail, comparatively, on categories of diagnosis, within each cassette, the frequencies of various calcification variants, correlatively on line, column or across as well as globally. We point out that

Table 4

Frequencies of bilateral calcifications (Left Right) of the choroid plexus and the pineal gland, on diagnosis categories<sup>1)</sup>, irrespective of sex and age

| Variable<br>Types       | Plexus                         |          | Pineal          |                 | Total        |
|-------------------------|--------------------------------|----------|-----------------|-----------------|--------------|
|                         | Noncalcification/Calcification |          |                 |                 |              |
| Diagnosis <sup>1)</sup> | Left Right                     | Freq     | n <sup>2)</sup> | y <sup>2)</sup> |              |
| TCC                     | nn <sup>3)</sup>               | No.<br>% | 113<br>34.0     | 50<br>15.1      | 163<br>49.1  |
|                         | yy <sup>3)</sup>               | No.<br>% | 67<br>20.2      | 102<br>30.7     | 169<br>50.9  |
|                         | Total                          | No.<br>% | 180<br>54.2     | 152<br>45.8     | 332<br>100.0 |
| N                       | nn                             | No.<br>% | 25<br>15.0      | 24<br>14.4      | 49<br>29.3   |
|                         | yy                             | No.<br>% | 33<br>19.8      | 85<br>50.9      | 118<br>70.7  |
|                         | Total                          | No.<br>% | 58<br>34.7      | 109<br>65.3     | 167<br>100.0 |
| E                       | nn                             | No.<br>% | 51<br>44.0      | 18<br>15.5      | 69<br>59.5   |
|                         | yy                             | No.<br>% | 12<br>10.3      | 35<br>30.2      | 47<br>40.5   |
|                         | Total                          | No.<br>% | 63<br>54.3      | 53<br>45.7      | 116<br>100.0 |
| AVC                     | nn                             | No.<br>% | 35<br>18.6      | 26<br>13.8      | 61<br>32.4   |
|                         | yy                             | No<br>%  | 44<br>23.4      | 83<br>44.1      | 127<br>67.6  |
|                         | Total                          | No.<br>% | 79<br>42.0      | 109<br>58.0     | 188<br>100.0 |
| PEIC                    | nn                             | No.<br>% | 81<br>31.3      | 39<br>15.1      | 120<br>46.3  |
|                         | yy                             | No.<br>% | 41<br>15.8      | 98<br>37.8      | 139<br>53.7  |
|                         | Total                          | No.<br>% | 122<br>47.1     | 137<br>52.9     | 259<br>100.0 |
| OTHERS                  | nn                             | No.<br>% | 22<br>25.9      | 7<br>8.2        | 29<br>34.1   |
|                         | yy                             | No.<br>% | 20<br>23.5      | 36<br>42.4      | 56<br>65.9   |
|                         | Total                          | No.<br>% | 42<br>49.4      | 43<br>50.6      | 85<br>100.0  |

<sup>1)</sup> The diagnosis categories established on the basis of the diagnosis at hospitalization are used in this paper mainly for methodological reasons.

<sup>2)</sup> n = noncalcified pineal gland; y = calcified pineal gland.

<sup>3)</sup> nn = both choroid plexus noncalcified; yy = both choroid plexus calcified.

the general calcification phenomenon differs significantly with the diagnosis groups: for TCC, E and PEIC one notices association of calcifications, the frequencies of the categories  $y_{yy}$  and  $n_{nn}$  being maximum; for N and AVC the frequency of the category  $n_{nn}$  is significantly lower than that of the other categories.

## CONCLUSIONS AND DISCUSSIONS

In order to have a brief image on the physiological typology proposed with a view to being noticed and diagnosed as such in the cranial CT investigations, we point out that from the point of view of the intracranial physiological calcification regarding the GP-PC couple we have found the following maximum frequencies for four out of the eight types in Table 2. The other four unilateral calcifications  $2(n_{yn})$ ,  $3(n_{ny})$ ,  $6(y_{yn})$ ,  $7(y_{ny})$  were not analysed in detail here.

- For type 1 (totally noncalcified  $n_{nn}$ ) the maximum frequency is around 70% with the age group under 19 years old and the minimum frequency with the age group 60–71 years old is around 15%.
- For type 8 (totally calcified,  $y_{yy}$ , bilateral) the maximum frequency is around 50% with the age groups 48–59 and 60–71 years old and the minimum frequency is around 10% with the group below 19 years old.
- Type 4 ( $n_{yy}$ , only PC calcified) shows a continual increase from approximately 10% with the first age group to around 25% with the last group, while type 5 ( $y_{nn}$ , only GP calcified) oscillates between 10% and 20% not exceeding the latter.
- It is important to mention that the last age category of over 72 years old is not an extreme limit for the signaled frequencies.

It follows that although the calcification process is physiological and increases with the age, the age is not the main cause of the calcification types; it is a reactive-adaptative variability process given by the complex of variables sex-constitutional ground-neuroendocrine context, etc.

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# UTILIZATION OF THE DERMAL CONFIGURATIONS IN THE CLINICAL DIAGNOSIS OF SEQUELARY INFANTILE ENCEPHALOPATHIES (IEP)

ANA ȚARCĂ

The author develops – from a pathological perspective – an ample dermatoglyphic study on a number of 200 children and teenagers with various infantile encephalopathy (IEP) sequelae (such as hemiplegia, paraplegia, tetraplegia, etc.), with ages ranging between 2 and 17 years, from whom a total number of 400 finger and palmary prints were taken over between 1995–2003. Among the complex clinical symptoms evidenced by several of the affected people, mention should be made of the presence of epilepsy, autism and ocular affections, which were further utilized, along with the reference sample from Moldavia, wherefrom all the affected persons actually came, in the comparative analysis of the results obtained.

One of the first observations to be made is that the dermatoglyphic picture of the patients with sequelary IEPs shows multiple anomalies or distortions with deep clinical significance, the frequency of which at the level of the batch exceeds by far that of the reference sample, being instead much closer to, or even exceeding, the value recorded by us in the three above-mentioned congenital maladies. Present in both boys and girls, and on the both hands of the affected ones, such “malformative sketches” support the assumption that, from an etiological viewpoint, among the factors responsible for causing the disease, one should not leave aside the genetic or teratogenic ones, which intervened in the first 3–5 months of intrauterine life (during the final establishment of the papillary ridges), the lesions of the central nervous system (CNS) produced in the last 3 months of pregnancy and the first two years of postnatal life being possibly considered only as releasing factors of the symptoms and of their amplification as well.

However, if having in mind that the present study is the first of this type initiated at a national level, although developed on a statistically well represented number of subjects, it is the author’s belief that the investigations of this type should be necessarily continued and extended, to support and corroborate the present investigations.

## INTRODUCTION

Defined as early as 1976 by Hagberg (cited by Arseni) as “**syndroms with motive handicap, characterized by deficit of mobility and disorders of posture, as caused by the immature brain’s lesion**”, the sequelary IEPs or cerebral paralyzes [1, 5,

6, 8, 11, 12] represent a group of maladies – heterogeneous as to their clinical symptoms – with a highly variable etiology, yet with a common feature: the age at which the lesion appears, namely between the last three months of pregnancy and the first two years of postnatal life, which is the period of the central nervous system's maturation. The IEPs may be congenital but not always hereditary, although several neurologists are convinced of the exclusive acquired character of the disease [1, 8, 11]. Consequently, from an etiological point of view, credit has been given to the idea that the causal factors involved in the production of lesions at various CNS levels are multiple and of an external nature. They have been grouped into **prenatal factors** (from the last 3 months of intrauterine life) – among which, mention should be made of: dispregnancies of the last three months of pregnancy, toxi-infections having affected the mother, acting through the placenta on the foetus, mother's endocrine disorders or her irradiation with Roentgen or ionized rays, Rh incompatibility, trombocytopenia, albuminuria, etc.; **perinatal factors**, that may include: obstretical traumatismes with intraparenchymatous hemorrhage, anomalies of the foetus' presentation, the double circular of the umbilical cord, travail anomalies, the utilization of forceps, hypothermia, etc.; and **postnatal factors**, intervening between 0 and 2 years – which is an essential time interval in the process of CNS maturation and myelinization –, including possible infectious diseases such as: rubeola, scarlet fever, meningo-encephalitis, prophylactic vaccinations, etc.

The lesions of the immature brain, that may be either uni- or bilateral, occur mainly in the region of the central motive neuron from the cortex level, as well as in the subcortical, medular regions and those of the pyramidal and extrapyramidal ways, being manifested as sequelae or paralyzes affecting usually large segments of the members or head and, to a lower extent, of the body. They may be manifested as: **hemiparesis** or **hemiplegia**, *i.e.*, the loss of the members' mobility exclusively on one side of the body, **diplegia**, *i.e.*, the members' motive deficit on both sides of the body, either symmetrically or crosswisely, **paraparesis** or **paraplegia** (on either of the superior or the inferior members), and finally as **tetraparesis** or **tetraplegia** – *i.e.*, paralysis of both pairs of members.

Once known that the lesions of the CNS may include its subcortical zones, too, the above-mentioned motive deficit is frequently accompanied by tonus (hypo- or hypertonia) or equilibrium disorders, by bone or muscle (hypo- or hypertrophy) trophicity, disorders of the osteo-tendonous reflexes, disorders of speech (allalia, disartria, etc.), or of phonation, mastication, deglutition, sight – sometimes up to cecity (blindness), problems of psychic development (mental deficiencies of various grades), epileptic crises – usually, of Jacksonian type, but sometimes even generalized (GM), disorders of the sphincters' reflexes (enuresis or double incontinence) – all these symptoms lending the malady an ample symptomatic polymorphism. Depending on the extent of the CNS lesion's amplitude, the sequelary IEPs may take quite various forms, from the simplest (recoverable) ones,

up to most severe (which cannot be healed). When the CNS lesions install slowly, the paralyzes take a *spastic (still functional) form*, while if they occur suddenly, they are of the *flaccid* or *atonic type* [1, 6, 7, 8, 12]. **IEP sequelae's spastic forms** are the most frequent to occur (around 50%); they are followed by the *athetozic ones*, which involve lesions of the extra-pyramidal system, thus affecting the involuntary movements, making them complex (hyperextension of the inferior members, rigidity of certain bodily segments, uncontrolled grimaces of the face, nasal, slow and drawling speaking, with *spasmus mobilus* (i.e., alternation between the hypertonic and hypotonic states, etc.). The third position – as to their frequency – is occupied by *IEP mixed forms*, in which the lesions affect the extrapyramidal and cerebellous system, more rarely met being *the atonic* or *flaccid form* ("Syndrome of the soft child"), predominant here being the cortical, cerebellous and extrapyramidal lesions [1, 7, 11, 12]. As the CNS originates from the same embryonic foil, "the ectoblast", any modification or lesion at the encephalon's level in the first 3–5 months of intrauterine life will have repercussions on the epidermal papillary ridges, too, occurring as deviations from normality, known under the name of dermatoglyphic distortions or anomalies.

Considering all these facts, the present paper develops a thorough study of the dermal configurations in patients affected by various forms of cerebral paralysis (hemiplegia, tetraplegia, etc.), from the region of Moldavia; it is, as far as we know, the first work of this type at a national level, aiming at seeing whether such distortions appear or not in the subjects' palmary prints as "malformative sketches", known to bear deep pathological significant meanings – so specially important in the early diagnosis of such syndromes.

## MATERIAL AND METHODS

During the dermatoglyphic investigations performed within the Center of Mental Health in Iași, we collected palmar prints from 200 children and teenagers (100 boys and 100 girls) suffering from sequelary IEPs with ages ranging between 2 and 17 years, all from Moldavia, 400 palmary prints being thus registered. Out of the whole number of subjects, **73 (34 boys and 39 girls)** have *paraparesis* or *paraplegia*, **61 (32 boys and 29 girls)** have *tetraparesis* or *tetraplegia*, **29 (17 boys and 12 girls)** – *hemiparesis* or *hemiplegia* and **6 (2 boys and 4 girls)** – *diplegia*, the remaining ones, i.e., **31 patients (15 boys and 16 girls)** evidencing less severe IEP sequelae (monoparesis, paralysis of the optical nerve, facial paralysis, head's tremulus, etc.). In **132** of them (**69 boys and 63 girls**), the paralysis, regardless of its form, is of the spastic type, while in **37 (15 boys and 22 girls)** of the flaccid or atonic type, in the remaining 31 ones the IEP sequelae being less severe. Also, in **108 subjects (56 boys and 52 girls)** IEP is associated with slight up to severe mental deficiency, while, in **42 of them (15 boys and 27 girls)**,



some ocular affections are to be mentioned, too; in **25 (10 boys and 15 girls)**, it is associated with epilepsy, of either Jacksonian type or generalized (GM), in **21 subjects (7 boys and 14 girls)** with autism or only some autistic elements of this complex syndrome and, finally, in **22 cases (12 boys and 10 girls)**, with enuresis and double incontinency.

In parallel with the patients' printing, an inquiry was developed on the accompanying parents, to see whether in the ascending line of the two parents' families or of the collateral relatives there existed at least one other person with IEP sequelae or at least some elements of the large spectrum of such malady's manifestations. The statistical processing of the dermatoglyphic data was made for the whole batch of affected people and not on categories of paralysis types, following sexual dimorphism and the bilateral differences for all the special features had in view. Once known that the symptomatic polymorphism of sequelary IEP includes, in most cases, ocular affections, epilepsy and autism as well, the author analyzed the results obtained comparatively with those of previous investigations devoted to the same malady, along with their interpretation *versus* a reference sample coming from the same Moldavian area as all the affected subjects.

The working methods employed were the classical ones [3, 16] improved by the new methodologies currently applied in pathological dermatoglyphic researches [4, 12, 13, 15].

## RESULTS AND DISCUSSION

Although the definition of sequelary IEPs states that they are syndroms manifested exclusively as a result of the lesions suffered by the CNS during its maturation and myelinization period (*i.e.*, between the last 3 months of intrauterine life and the first two years of postnatal life), the results of the researches developed from a dermatoglyphic perspective evidenced several dermatoglyphic anomalies or distortions with deep clinical implications, which are but malformative sketches or signs of their carriers' maladies. More than that, the anamnesis developed with their parents – as to the presence or absence of the disease, or at least of some elements from its clinical symptomatology – and in the ascending line or in collateral relatives, evidenced the fact that in more than half of the affected patients sequelary IEP was inherited. Also, the dermatoglyphic anomalies, even the most severe ones, if considering their pathological significance, were found to be present, too, in the finger and palmar prints of the patients with simple (recoverable) forms of the malady. Having all such observations in view, the results obtained support the hypothesis according to which, among the causal factors involved in the occurrence of sequelary IEP, one should not leave aside those of genetic or teratological nature, the intervention of which upon the CNS is manifested in

Table 1

Comparative data on sexual dimorphism and bilateral differences in patterns' distribution in the 5 palm's compartments

| Affections and reference batch             | Sex | Hp   |      |             | Th/I |     |            | II  |     |            | III  |      |             | IV   |      |             |
|--------------------------------------------|-----|------|------|-------------|------|-----|------------|-----|-----|------------|------|------|-------------|------|------|-------------|
|                                            |     | L    | R    | L+R         | L    | R   | L+R        | L   | R   | L+R        | L    | R    | L+R         | L    | R    | L+R         |
| IEP<br>(N= 200)                            | B   | 29.0 | 31.0 | 30.0        | 2.0  | 4.0 | 3.0        | 3.0 | 3.0 | 3.0        | 10.0 | 39.0 | 24.5        | 43.0 | 29.0 | 36.0        |
|                                            | G   | 27.0 | 41.0 | 34.0        | 4.0  | 4.0 | 4.0        | —   | —   | —          | 13.0 | 41.0 | 27.5        | 35.0 | 23.0 | 29.0        |
|                                            | T   | 28.0 | 36.0 | <b>32.0</b> | 3.0  | 4.0 | <b>3.5</b> | 1.5 | 1.5 | <b>1.5</b> | 11.5 | 40.0 | <b>25.7</b> | 39.0 | 25.5 | <b>32.5</b> |
| Epilepsy<br>(N=102)<br>A. Țarcă<br>2002    | B   | 21.0 | 35.3 | 28.4        | 11.8 | 5.9 | 8.9        | 1.9 | 3.9 | 2.9        | 25.5 | 47.1 | 36.2        | 37.2 | 21.6 | 29.4        |
|                                            | G   | 27.4 | 31.3 | 29.4        | 1.9  | 1.9 | 1.9        | —   | 1.9 | 0.9        | 7.9  | 37.2 | 22.5        | 37.2 | 23.5 | 30.4        |
|                                            | T   | 24.5 | 33.3 | <b>28.9</b> | 6.9  | 3.9 | <b>5.4</b> | 0.9 | 2.9 | <b>1.9</b> | 16.7 | 42.2 | <b>29.4</b> | 37.2 | 22.5 | <b>30.0</b> |
| Autism<br>(N=137)<br>A. Țarcă 2003         | B   | 20.9 | 32.8 | 26.9        | 7.5  | 3.0 | 5.2        | 3.0 | 5.0 | 3.0        | 14.9 | 38.8 | 26.9        | 49.2 | 32.8 | 41.0        |
|                                            | G   | 35.7 | 40.0 | 37.9        | 2.9  | 1.4 | 2.1        | —   | —   | —          | 10.0 | 32.9 | 21.4        | 48.6 | 38.5 | 43.5        |
|                                            | T   | 28.4 | 36.5 | <b>32.5</b> | 5.1  | 2.2 | <b>3.7</b> | 1.5 | 1.5 | <b>1.5</b> | 12.4 | 35.7 | <b>24.1</b> | 48.9 | 35.8 | <b>42.3</b> |
| OD<br>(N=200)<br>A. Țarcă 2000             | B   | 30.0 | 37.0 | 33.5        | 4.0  | 1.0 | 2.5        | —   | 5.0 | 2.5        | 15.0 | 48.0 | 31.5        | 47.0 | 35.0 | 41.0        |
|                                            | G   | 28.0 | 37.0 | 32.5        | 6.0  | 3.0 | 4.5        | 3.0 | 6.0 | 4.5        | 18.0 | 46.0 | 32.0        | 54.0 | 38.0 | 46.0        |
|                                            | T   | 29.0 | 37.0 | <b>33.0</b> | 5.0  | 2.0 | <b>3.5</b> | 1.5 | 5.5 | <b>3.5</b> | 16.5 | 47.0 | <b>31.7</b> | 50.5 | 36.5 | <b>43.5</b> |
| Moldavian<br>reference<br>batch<br>(N=200) | B   | 29.1 | 35.9 | 32.5        | 15.7 | 8.2 | 12.0       | 1.4 | 3.8 | 2.6        | 22.2 | 52.0 | 37.1        | 54.5 | 43.8 | 48.9        |
|                                            | G   | 35.0 | 35.3 | 35.2        | 8.5  | 4.0 | 6.2        | 0.3 | 2.7 | 4.5        | 23.8 | 46.2 | 35.0        | 55.8 | 40.9 | 48.3        |
|                                            | T   | 32.1 | 35.7 | <b>33.9</b> | 12.1 | 6.1 | <b>9.1</b> | 0.9 | 3.2 | <b>2.0</b> | 23.0 | 49.1 | <b>36.1</b> | 54.9 | 42.3 | <b>48.6</b> |

IEP = infantile encephalopathy

OD = ocular diseases

the first 3–5 months of intrauterine life, *i.e.*, the interval in which the epidermal papillary ridges are formed and finalized, the lesions from the late prenatal, perinatal or postnatal period representing probably only the secondary causes of such complex syndroms' manifestation.

In the following, the main malformative stigmata or dermatoglyphic anomalies evidenced in the patients' palmary picture will be presented, along with their distribution as a function of sex and laterality, followed comparatively with the one observed by us in epilepsy, autism and severe ocular affections (born-blindness included) – maladies included in the clinical symptomatology of several patients –, on the one hand, and, on the other, comparatively with the values recorded by the author on the reference samples coming from the same Moldavian area as the affected subjects [Ph.D., 1995].

Special mention should be made from the very beginning of the fact that the increased number of distortions observed in the individual dermatoglyphic print of the affected people (of both sexes) led – at the level of the whole sample – to percent values which differentiate it sensibly from the reference batch, being instead closer to the behaviour of the patients affected by the above-mentioned maladies. Consequently, a first, general anomaly at the level of the palmary picture (Table 1) refers to *the substantial diminution of the true pattern' frequency from the interdigital space III*, up to 25.70% *versus* 36.10% – the values recorded in the reference sample, such a decrease being more intense in the boys' series (24.5%), comparatively with that of the girls (27.5%). This type of distortion induced another significant deviation from normality bearing clinical implications *i.e.*, *change of the classical distribution of succession in the patterns' frequency in the 5 palm's compartments, the interdigital space III being situated in the 3rd position in the classical formula (IV>Hp>III>Th/I>II) instead of the 2nd one (IV>III>Hp>Th/I>II)*, as usually occurring in normal populations and, implicitly, in the reference sample. The same inversion in the patterns' distribution at the palm's level was observed, too, in the three maladies analyzed for the sake of comparison (illustrated in the same Table 1). However, as regards sexual dimorphism and the bilateral differences, in the distribution of the palmary pattern's frequency they follow – with only a few exceptions (such as the interdigital space IV, where B>F instead of F<B) – the general classical trends, which assume more frequent occurrences of the patterns in Hp and IV, with girls, and, respectively, in Th/I, II and III, in boys, as well as in Hp, II and III on the right hands and, respectively, in Th/I and IV on the left ones, which is indicative of the fact that the affected subjects come from an apparently dermatoglyphically normal population.

An important number of the palm's dermatoglyphic markers bearing pathological significance [12, 13] have been evidenced as well at the level of its compartments, most of them occurring in the Hp area (Table 2). Out of the total number of 11 distortions recorded, whose multiple clinical implications are well-known due to their presence in

Table 2

Percent distribution, as a function of hand and sex, of the main palmary dermatoglyphic anomalies viewed comparatively with other maladies

|                             | Diseases                | Boys         |              |              | Girls        |              |              | Total        |              |              |
|-----------------------------|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                             |                         | L            | R            | L + R        | L            | R            | L + R        | L            | R            | L + R        |
| A <sup>R</sup><br>in Hp     | Sequelary IEP           | 3.00         | 2.00         | 2.50         | 1.00         | 7.00         | 4.00         | 2.00         | 4.50         | 3.25         |
|                             | Epilepsy                | 1.96         | 3.92         | 2.94         | 1.96         | —            | 0.98         | 1.96         | 1.96         | 1.96         |
|                             | Autism                  | —            | 4.47         | 2.23         | —            | 7.14         | 3.57         | —            | 5.80         | 2.90         |
|                             | Ocular diseases         | 3.00         | 7.00         | 5.00         | 2.00         | 5.00         | 3.50         | 2.50         | 6.00         | 4.25         |
|                             | <b>Reference sample</b> | —            | <b>1.00</b>  | <b>0.50</b>  | —            | <b>1.00</b>  | <b>0.50</b>  | —            | <b>1.00</b>  | <b>0.50</b>  |
| L <sup>U</sup><br>in Hp     | Sequelary IEP           | 11.00        | 8.00         | 9.50         | 9.00         | 9.00         | 9.00         | 10.00        | 8.50         | 9.25         |
|                             | Epilepsy                | 1.96         | 7.84         | 4.90         | 5.88         | 5.88         | 5.88         | 3.92         | 6.86         | 5.39         |
|                             | Autism                  | 8.95         | 13.43        | 11.19        | 10.00        | 5.71         | 7.85         | 9.49         | 9.49         | 9.49         |
|                             | Ocular diseases         | 15.00        | 11.00        | 13.00        | 8.00         | 13.00        | 10.50        | 13.50        | 12.00        | 12.75        |
|                             | <b>Reference sample</b> | <b>1.00</b>  | <b>2.00</b>  | <b>1.50</b>  | <b>3.00</b>  | <b>1.00</b>  | <b>2.00</b>  | <b>2.00</b>  | <b>1.50</b>  | <b>1.75</b>  |
| L <sup>d</sup><br>in Hp     | Sequelary IEP           | 2.00         | 4.00         | 3.00         | 3.00         | 2.00         | 2.50         | 2.50         | 3.00         | 2.75         |
|                             | Epilepsy                | —            | 1.96         | 0.98         | —            | —            | —            | —            | 1.08         | 0.49         |
|                             | Autism                  | 1.49         | 1.49         | 1.49         | —            | —            | —            | 0.74         | 0.74         | 0.74         |
|                             | Ocular diseases         | 1.00         | 5.00         | 3.00         | 1.00         | 2.00         | 1.50         | 1.00         | 3.50         | 2.25         |
|                             | <b>Reference sample</b> | —            | —            | —            | —            | —            | —            | —            | —            | —            |
| tt'.tt't''<br>etc.<br>in Hp | Sequelary IEP           | 26.00        | 29.00        | 27.50        | 26.00        | 39.00        | 32.50        | 26.00        | 34.00        | 30.00        |
|                             | Epilepsy                | 17.64        | 21.57        | 19.60        | 23.53        | 25.49        | 24.51        | 20.58        | 23.53        | 22.05        |
|                             | Autism                  | 22.40        | 32.83        | 27.61        | 32.86        | 40.00        | 36.43        | 27.74        | 36.49        | 32.11        |
|                             | Ocular diseases         | 27.00        | 35.00        | 31.00        | 25.00        | 35.00        | 30.00        | 26.00        | 35.00        | 30.50        |
|                             | <b>Reference sample</b> | <b>15.00</b> | <b>16.00</b> | <b>15.50</b> | <b>16.00</b> | <b>17.00</b> | <b>16.50</b> | <b>15.50</b> | <b>16.50</b> | <b>15.75</b> |
| t <sub>0</sub><br>in Hp     | Sequelary IEP           | 11.00        | 10.00        | 10.50        | 6.00         | 4.00         | 5.00         | 8.50         | 7.00         | 7.75         |
|                             | Epilepsy                | 5.88         | 1.96         | 3.92         | 5.88         | 3.92         | 4.90         | 5.88         | 2.94         | 4.21         |
|                             | Autism                  | 2.98         | 1.49         | 2.24         | 10.00        | 4.28         | 7.14         | 6.57         | 2.92         | 4.75         |
|                             | Ocular diseases         | —            | 1.00         | 0.50         | 1.00         | 1.00         | 1.00         | 0.50         | 1.00         | 0.75         |
|                             | <b>Reference sample</b> | —            | —            | —            | —            | —            | —            | —            | —            | —            |

Table 2 (continued)

|                                                                              | Diseases                | Boys         |              |              | Girls       |             |              | Total        |              |              |
|------------------------------------------------------------------------------|-------------------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|--------------|
|                                                                              |                         | L            | R            | L + R        | L           | R           | L + R        | L            | R            | L + R        |
| T <sub>11</sub> and<br>T <sub>12</sub> instead<br>of T <sub>13</sub><br>(Hp) | Sequelary IEP           | 23.00        | 11.00        | 17.00        | 36.00       | 23.00       | 29.50        | 29.50        | 17.00        | 23.25        |
|                                                                              | Epilepsy                | 25.50        | 17.60        | 21.60        | 39.20       | 23.50       | 31.40        | 32.30        | 20.60        | 26.50        |
|                                                                              | Autism                  | 41.80        | 22.40        | 32.10        | 30.00       | 27.10       | 28.60        | 35.80        | 24.80        | 30.30        |
|                                                                              | Ocular diseases         | 25.00        | 3.00         | 14.00        | 23.00       | 15.00       | 19.00        | 24.00        | 9.00         | 16.50        |
|                                                                              | <b>Reference sample</b> | <b>5.00</b>  | <b>2.00</b>  | <b>3.50</b>  | <b>7.00</b> | <b>4.00</b> | <b>5.50</b>  | <b>6.00</b>  | <b>3.00</b>  | <b>4.50</b>  |
| The dense<br>or very<br>dense<br>network<br>in Th/I                          | Sequelary IEP           | 23.00        | 27.00        | 25.00        | 30.00       | 32.00       | 31.00        | 26.50        | 29.50        | 28.00        |
|                                                                              | Epilepsy                | 29.41        | 37.25        | 33.33        | 58.82       | 58.82       | 58.82        | 44.11        | 48.03        | 46.08        |
|                                                                              | Infantile autism        | 29.90        | 29.90        | 29.90        | 61.43       | 55.71       | 58.57        | 45.98        | 43.06        | 44.52        |
|                                                                              | Ocular diseases         | 21.00        | 26.00        | 23.50        | 57.00       | 60.00       | 58.50        | 39.00        | 43.00        | 41.00        |
|                                                                              | <b>Reference sample</b> | <b>3.00</b>  | <b>5.00</b>  | <b>4.00</b>  | <b>5.00</b> | <b>7.00</b> | <b>6.00</b>  | <b>4.00</b>  | <b>6.00</b>  | <b>5.00</b>  |
| a-b distance<br><21mm<br>in F and<br>24 mm in<br>M                           | Sequelary IEP           | 72.00        | 80.00        | 76.00        | 70.00       | 76.00       | 73.00        | 71.00        | 78.00        | 74.50        |
|                                                                              | Epilepsy                | 58.80        | 82.30        | 70.50        | 39.20       | 51.00       | 45.10        | 49.00        | 66.60        | 57.80        |
|                                                                              | Autism                  | 61.20        | 67.20        | 64.20        | 55.70       | 57.10       | 56.40        | 58.40        | 62.00        | 60.20        |
|                                                                              | Ocular diseases         | 48.00        | 59.00        | 53.50        | 23.00       | 27.00       | 25.00        | 35.50        | 43.00        | 39.20        |
|                                                                              | <b>Reference sample</b> | <b>11.00</b> | <b>13.00</b> | <b>12.00</b> | <b>9.00</b> | <b>12.0</b> | <b>10.50</b> | <b>10.0</b>  | <b>12.50</b> | <b>11.25</b> |
| Cx                                                                           | Sequelary IEP           | 48.00        | 31.00        | 39.50        | 44.00       | 28.00       | 36.00        | 46.00        | 29.50        | 37.75        |
|                                                                              | Epilepsy                | 41.17        | 25.49        | 33.33        | 45.10       | 37.25       | 41.17        | 43.13        | 31.37        | 37.25        |
|                                                                              | Autism                  | 37.31        | 35.82        | 36.56        | 32.86       | 27.14       | 30.00        | 35.03        | 31.38        | 33.20        |
|                                                                              | Ocular diseases         | 41.00        | 27.00        | 33.50        | 26.00       | 16.00       | 21.00        | 33.00        | 21.50        | 27.20        |
|                                                                              | <b>Reference sample</b> | <b>14.00</b> | <b>8.00</b>  | <b>11.00</b> | <b>7.00</b> | <b>3.00</b> | <b>5.00</b>  | <b>10.50</b> | <b>5.50</b>  | <b>8.00</b>  |
| Co                                                                           | Sequelary IEP           | 8.00         | 7.00         | 7.50         | 18.00       | 17.00       | 17.50        | 13.00        | 12.00        | 12.50        |
|                                                                              | Epilepsy                | 7.84         | 9.80         | 8.82         | 17.65       | 9.80        | 13.72        | 12.74        | 9.80         | 11.27        |
|                                                                              | Autism                  | 5.97         | 4.47         | 5.22         | 11.43       | 8.57        | 10.00        | 8.76         | 6.56         | 7.66         |
|                                                                              | Ocular diseases         | 13.00        | 8.00         | 10.50        | 18.00       | 10.00       | 14.00        | 15.50        | 9.00         | 12.25        |
|                                                                              | <b>Reference sample</b> | <b>3.00</b>  | <b>2.00</b>  | <b>2.50</b>  | <b>5.00</b> | <b>2.00</b> | <b>3.50</b>  | <b>4.00</b>  | <b>2.00</b>  | <b>2.00</b>  |
| Transverse<br>palmar<br>sulcus<br>(Simian<br>Line)                           | Sequelary IEP           | 18.00        | 12.00        | 15.00        | 15.00       | 8.00        | 11.50        | 16.50        | 10.00        | 13.50        |
|                                                                              | Epilepsy                | 7.83         | 3.92         | 5.87         | —           | 5.88        | 2.94         | 3.92         | 4.90         | 4.41         |
|                                                                              | Autism                  | 11.94        | 11.94        | 11.94        | 10.00       | 2.86        | 6.43         | 10.95        | 7.30         | 9.12         |
|                                                                              | Ocular diseases         | 5.00         | 4.00         | 4.50         | 6.00        | 2.00        | 4.00         | 5.50         | 3.00         | 4.25         |
|                                                                              | <b>Reference sample</b> | <b>3.00</b>  | <b>1.00</b>  | <b>2.00</b>  | <b>1.00</b> | <b>1.00</b> | <b>1.00</b>  | <b>2.00</b>  | <b>1.00</b>  | <b>1.50</b>  |

other severe congenital maladies as well [2, 3, 4, 9, 12, 13, 14, 15, 16], *the ulnar loop from Hp ( $L^U$ ), the distal loop ( $L^d$ ) or the parathenar pattern* [2], *found at the intersection of the Hp area with Th/I, the sensible diminution of the distance between triradia a and b, delimitating the interdigital space II, much under its average value (i.e., 21 mm in girls and 24 mm in boys) in the Romanian population* [16], *the partial suppression of the line C's course (Cx), which starts from the triradius "c" occurring at the basis of the ring finger (IV), and the transverse sulcus or the Simian Line*, register in the group under study, higher ratios in the series of the affected boys. The radial arch from Hp ( $A^R$ ), *the coexistence, in the same palm, of 2, 3 or 4 triradia* of which at least one is distally displaced to the center of the palm ( $t''$  or  $t'''$ ) or situated towards the palm's ulnar border ( $t^u$ ), *the absence in the palm of the axial triradius t, denominated as  $t_0$ , the finalization of the trajectory of the line T which starts from triradius t (regardless of its position in Hp) in the palm's field 11 and 12 ( $T_{11}$  and  $T_{12}$ ) instead of 13 ( $T_{13}$ ), the ridges' disposition in Th/I as a dense and very dense network*, instead of its curving towards the palm's radial border and, finally, *the total suppression of the line C's course*, starting from triradius c (Co), *are more frequently met in the girls' series*. One should observe from Table 2 that the same dimorphic tendency in the frequency distribution of the palmar anomalies is present also in the other 3 maladies considered for comparison, being – as already shown – a component part of the clinical picture of several patients with sequelary IEPs.

A further analysis of the distribution of the palmar distortions' frequency on the patients' two hands, too (Table 2), shows that  *$L^U$  from Hp,  $t_0$ ,  $T_{11}$ - $T_{12}$ , Cx, Co and the transverse palmar sulcus are more frequently occurring on the left palms, while  $A^R$  from Hp,  $L^d$  or the parathenar pattern,  $t''t''$ , etc., the dense and very dense network of the papillary ridges from Th/I and the much reduced a-b distance, on the contrary, on the right palms*; such trends were put into evidence by the author in epileptics, autists and subjects with severe congenital ocular affections as well. The same Table 2 illustrates that, generally, with only few exceptions, *the sexual dimorphism and the bilateral differences in the distribution of the dermatoglyphic distortions at the level of the affected people's palm correspond to the ones manifested in the reference group of Moldavia*, whose dermatoglyphic behaviour is similar to that of the Europoid-type populations in general and to the Romanian one, from which the affected subjects come, in particular.

## CONCLUSIONS

The dermatoglyphic study developed on patients with various IEP sequelae has put into evidence an ample and intense pathological charge expressed at the level of the individual palmar print by the presence of about 2–7 anomalies or distortions (out of the total number of 13 recorded) carrying several clinical implications.

As, at the level of the group, such dermatoglyphic distortions are but deviations in the frequency of some dermatoglyphic peculiarities from the values recorded in the normal population from which the affected ones come, in the present sample, the percent values attained by various dermatoglyphic indicators are sensibly different from the values of the reference one, being instead closer to, sometimes even exceeding, those recorded in patients affected by epilepsy, infantile autism or severe ocular affections which, as already mentioned, should be included among the secondary symptoms of many subjects' IEPs. Consequently, the results of this study invalidate the hypothesis of the exclusively acquired origin of the IEP as a result of the CNS lesions during its maturation and myelinization, in which the papillary ridges are already definitely formed (suffering no other modifications up to the moment of death), supporting instead the hypothesis of the intervention, in an earlier stage of the affected people's prenatal life, of some hereditary or teratogenic factors whose action also influences the epidermal papillary ridges through the occurrence of the malformative sketches or anomalies evidenced by the author as playing a special part in the precocious diagnosis of such frequent syndromes.

Such anomalies or distortions were found in both the affected boys and girls, and also on the both palms of the subjects of both sexes. The sexual dimorphism in the distribution of the anomalies' frequency is suggestively expressed by higher values, in boys, for  $L^U$  from Hp,  $L^d$  or the parathenar pattern of the same area, the diminution of the a-b distance much under the average values of the Romanian population (*i.e.*, 21 mm in girls and 24 mm in boys), Cx and the transverse palmar sulcus, the situation being reversed in the case of girls when referring to  $A^R$  from Hp,  $tt't''$ , etc.,  $t_0$ ,  $T_{11}$ - $T_{12}$ , from the same compartment, the dense and very dense network from Th/I and for Co. As to the bilateral differences, with very few exceptions, they assume higher percent values for  $L^U$ ,  $t_0$ ,  $T_{11}$ - $T_{12}$ , Cx, Co and the transverse palmar sulcus on the affected people's left palms, and for the other anomalies, *i.e.*,  $A^R$ ,  $L^d$ ,  $tt't''$ , the dense and very dense network from Th/I and the much reduced a-b distance, on the right palms of the both sexes.

Worth mentioning is the fact that, for most of the distortions under study, the sexual and bilateral differences agree with the ones observed in the other maladies analyzed comparatively as well as with those met in the reference sample; this supports the idea of the origin of all the groups of affected people in the same apparently normal Moldavian population. In spite of the fact that this study was developed on a statistically well-represented number of patients, the obtained results are only preliminary if considering that this is the first investigation of this type at a national level, which is a challenge to develop and extend such researches for more complete and convincing scientific results.

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## ETHNICITY AND SOCIETY IN THE ZĂBALA VILLAGE (TRANSYLVANIA)\*

MARIN CONSTANTIN

This article deals with the study of ethnicity in a Transylvanian village. Three local ethnic groups – Hungarian, Romanian, and Roma – are analyzed as to their demographic, genealogical, and cultural data. By relating his own field information to that gathered by his colleagues, the author tries to outline the current realities of the village cross-cultural cohabitation, as a community framework within which the ethnic identity is maintained and reified through kinship, territorial, economic, and ritual behavior.

The cultural cohabitation of different ethnic groups provides a framework for understanding not only ethnicity *per se*, but also the ways in which the various domains of social life – such as kinship, economy, and religion – may interrelate with one another through the ethnic (self)identification and differentiation. The question arises “what is the role the ethnic diversity plays within community as a whole – is it a means, or a scope, or both?” as outlined by Smith (1995: 728),

*“There is no practical limit to the multiplication of cultural differentiae, or to rediscovery of ethno-histories and myths of ethnic descent [...]”*

From another point of view, cultural diversity is seen as a “basis for human rights” to be preserved as any “endangered species and varieties of plants”:

*“The maintenance and facilitation of population diversity – in plants, animals and humans in particular – increase the probability of species survival in the face of changing conditions. [...] The right of cultural transmission must also be guaranteed since it is the analog of genetic transmission.”* (Barnett 1988: 24)

As an “ascribed” status, then, ethnicity seems to be rendered as an arena or background to enact (or to determine?) other statuses – because “achieved” – like

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the occupational ones. In the following, we shall not be however concerned with issues such as ethnic multiplication or survival, but simply with ethnic *modus vivendi* in a Transylvanian village. Our theoretical interest consists in understanding how ethnicity is thought and played upon when it appears rather as a part only, and not as a “background”, in the day-to-day process of village life, both at the private and public levels.

### THE ETHNIC GROUPS OF THE ZĂBALA VILLAGE

Zăbala (in Hungarian, Zábola) is a commune of the Transylvanian county of Covasna, including as an administrative unit four other villages, namely Pava, Gelinca, Tamaş, and Zagon. According to Zăbala village council data, the total population of these villages is made of 5,100 inhabitants, of which 2,700 Magyars (or Szeklers, by origin), 1,700 Romanians, and 700 Roma (or Gypsies).<sup>1</sup>

At the level of ethnic identity, the present official data (as gathered during the census from 1992) seems biased as their tendency (like in other Romanian localities) does not take into account the Roma identity, to the degree in which the Romas in Zăbala claimed themselves to be “Magyars”. On the other hand, also the Szeklers also consider themselves to be “Magyars” as well.

As the Roma people say they have forgotten their Romani native tongue, the villagers communicate with one another through Hungarian and Romanian; such a bilinguism is asymmetric, as Hungarian is also spoken in the inter-ethnic relationships. Bilinguism in Zăbala is the result of the Magyars’ demographic majority in a village that is part of the Romanian national state. Without contrasting to the local ethnic groups, the simultaneous (though asymmetric) use of Hungarian and Romanian languages at the same time renders possible the cultural cohabitation and the distinct continuity of the two ethnic identities. Anthroponymy confirms Zăbala’s bilinguism both in the case of patronymics, and in that of given names.

From the religious point of view, Zăbala includes three Christian churches. According to the information from the local priests, there are in Zăbala 998 Reformats, some 980 Roman Catholics, and some 970 Orthodox.<sup>2</sup>

The Orthodox faith corresponds to Romanians, while the two other churches share their disciples from among the Hungarian and Roma ethnic groups (the Roma

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<sup>1</sup> Based on the data of the Zăbala village council, Şerban provides (2000: 37) the number of 3,518 inhabitants of the Zăbala village only, as representing 1,228 households. As for the Zăbala’s ethnic composition, it included (in 1992) 2,474 Magyars, 934 Romanians, and 190 Roma (cf. Pozsony 1999 cited by Şerban 2000: 37).

<sup>2</sup> According to the same census from 1992, two other religious minorities were identified at Zăbala, namely those of the Greek Catholics and the Protestants. The census data for all Zăbala churches are the following: 1,415 Reformats, 1,158 Roman Catholics, 908 Orthodox, 57 Protestants, and 14 Greek Catholics (cf. Pozsony 1999 cited by Şerban 2000: 37).

identity is recognized by the three churches). There are two cemeteries at Zăbala, one of them Orthodox, the other two Reformat and Roman-Catholic.<sup>3</sup> Among the Magyars and the Roma, a double religious identification is thus at work, as none of these groups overlaps with any specific church. This religious tripartition of the village population originated in the 16th century Reform, but also in the Roma orientation to those churches shared by the Hungarian majority at Zăbala. After the language asymmetry, the Hungarian ethnic prevalence is this time marked by the religious affiliation.

### THE GENEALOGICAL MEMORY AND MARITAL ORIENTATION

The farm (agriculture) register of the local village council indicates 103 family names at Zăbala, as defining 850 households. Local patronymics are not always ethnic denominators as well; the Hungarian lineage Oprá, for instance, is distinct from the Romanian lineage Oprea. From a demographic perspective, Zăbala's lineages may be called "large" (as including more than 15 families), "middle" (about 5–15 families), and "small" (five families at the most).<sup>4</sup>

My research on the descent and marriage among the Zăbalans consists in a comparative analysis of the local genealogical memory and marital orientation. The sample chosen was that of nine lineages (large, middle, and small), representing the three ethnic groups living at Zăbala, as follows:

- Hungarian lineages: Kosma (15 families), Pozsony (8 families), and Jacobfy (2 families);
- Romanian lineages: Oprea (15 families – among which 3 Hungarian families, however), Vlad (9 families), and Muntean (5 families);
- Roma lineages: Majlat (11 families), Gerebenes (6 families), and Rostas (3 families).

When compared to Hungarians and Roma, the Romanians' genealogical memory appears to be more accurate (26 families reckon 162 marriages, as compared to 129 marriages among the 28 Hungarian families, and 60 marriages in 20 Roma families).

<sup>3</sup> In Zăbala village, although the Roman Catholics and Protestants take together part in the *Halotah Napja* (Day of the Dead, November 1), only the Roman Catholics pray at their family graves, while the Protestants do not attend the Catholic priest's prayer at the high cross in the cemetery (cf. Dorondel 2001: 40).

<sup>4</sup> Referring to Zăbala and Pava as to "a unique rural community", Șerban identifies 629 local households (from a total number of 1,228) as represented by 36 patronymics. Then he finds out "48 genealogies including 426 nuclear families (35% of the total families)". Șerban classifies these 48 lineages into three groups: G1 (the group of numerous genealogies, with 14 to 29 families), G2 (the group of middle genealogies, with 8 to 12 families), and G3 (the group of small genealogies, with 4 to 7 families)(cf. Șerban 2000: 40).

While the Hungarians and the Roma marry almost exclusively within their ethnic groups (one marriage only out of the 129 declared by the Hungarians included a Romanian partner), the Romanian families were made in five cases (out of 162) in relation to Magyars (the differential criterion is thus the wife). The differences are even higher as concerns the exogamous behavior at Zăbala: 42% of the Romanian marriages were concluded with partners coming from outside the village community, in comparison with 25% among the Roma and of 21% among the Hungarians.<sup>5</sup>

Along with its language and religion conservatism, the Romanian ethnic group has an elevated marital orientation beyond the village community, without excluding some interethnic marriages at Zăbala. Instead, most of the Hungarian and Roma marriages show a double internal character (within the ethnic and village groups). The marital openness among the Romanians at Zăbala is perhaps a kind of compensatory behavior in relation to the Hungarian demographic majority and even to the Magyars' and Roma's religious prevalence.

#### ECONOMIC AND TERRITORIAL PATTERNS AT ZĂBALA

The Hungarian demographic majority in Zăbala village is also reflected at the level of the local territorial grouping. Indeed, three sides of the village (western, southern, and eastern) are occupied by Magyars, while the Romanians inhabit the northern part, and the Roma live at the eastern extremity of Zăbala.<sup>6</sup>

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<sup>5</sup> Taking into account the number of married persons in Zăbala and Pava during the period 1947–1996, Șerban finds out the following “ethnic distribution of exogamy”: 70% among the Magyars, 23% among the Romanians, and 7% among the Roma (cf. Șerban 2000: 44). The cleavage between Șerban's data and mine follows, I believe, the discrepancy between the archive study of the village civil registers (the source of Șerban's elaborate statistics on the local matrimonial alliances) and the oral interviewing of villagers (which was my limited method). Besides, Șerban's ethnographic object of study was the whole communities of Zăbala and Pava, not only some of the local lineages according to their ethnic identity (as was my case). Also, Șerban is not concerned with the intra-village ethnic groups endogamy/exogamy ratio, which is another difference between our field inquiries.

Other data on marriage in Zăbala are provided by Dorondel (2001: 43), as concerns 129 marriages between partners of different religion in Zăbala (1950–1998). Dorondel (also based on the local registers – those of the Protestant and Orthodox, not also the Catholic, churches) identifies 92 marriages between Magyars (as Protestants and Catholics), and 37 marriages between Orthodox (Romanians) and Protestants (Magyars).

I would infer that the above data (Șerban's, Dorondel's, and mine) are to be read together, and contrasted as such as for their field scopes and methods, and for their results as well.

<sup>6</sup> According to Șerban (2000: 43), “The tendencies of territorial development are recognized by some terms of local toponymy: Romanian Lane (*Ulița Românească*), Condești's Lane (*Ulița Condeștilor*), Gypsy Lane (*Ulița Țigănească*), Alexander's Plain (*Pusztasele*) or Jews' Plain (*Zsidoposztja*).”

As concerns the Romanians, their settlement (near the hills), is adapted to their pastoral way of life, as still practiced today by some of them.<sup>7</sup> The Roma peripheral location seems to indicate their difficulties of social integration. The Roma's current involvement in commerce practices (consisting in trading city-made goods) favored the enrichment of some families within this ethnic group and thus their moving to houses from the village center. After 1990, most of the Magyars and Romanians shared the local lands. However, the agricultural properties are fragmented in order that nobody be damaged because of the irregularities of an extended field.<sup>8</sup> Some cooperative practices usually occur between Romanians and Magyars, as between those who own land but have no means of transportation, and those who have no land but have rural vehicles instead.

### SOME ELEMENTS OF INTERETHNIC ETHOS

Ethnography practice among the interethnic population of Zăbala is also relevant as for local cultural values and attitudes. Although asking for genealogical data is obviously not always seen as an open concern, but rather as a private one, the ethnographer benefited of confidence and patience from the part of his Magyar, Romanian, and Roma interlocutors. One exception that occurred was that of a Magyar woman (40 years old) who simply refused to answer and invited the author of this paper to immediately leave her household, in spite of her husband's (also Magyar) will. Similarly, a Roma man (35) told the ethnographer he would better go to the Romanian president and ask for improving the local life quality. Such rare situations are to be explained in relation to the local perception of ethnography as an (indiscrete) practice of journalism. Several Roma women believed the ethnographer was a sort of administrative agent concerned with the state allowances for their children.

In the field, the ethnographer never met any conflicting situation between the three ethnic groups of the village. However, he heard several remarks more or less significant as for local cross-cultural cohabitation. Thus, as a Romanian informant (65 years old) said, "it happens that some stupid Romanians marry Magyar women, while never Magyar men marry Romanian women." Such an opinion may of course be related to our above data on the marriage among Zăbala's ethnic groups, especially as concerns the ethnic boundaries of local marriages. A piece of advice

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<sup>7</sup> Șerban speaks about a "Romanian quasi-monopoly" in grazing the sheep, which is also confirmed by statistics: 30 of the local 35 shepherds are Romanian (other four of them are Magyar, and one is Roma), and 10 of the local sheepfolds are managed by Romanians (compared to two only, of the Magyars)(cf. Șerban 2000: 39–40).

<sup>8</sup> A very important finding made by Șerban is that the differences in the lineage organization among the Hungarian and Romanian groups can be interpreted in economic terms, as is the case of the Magyar small lineage trend in relation to "preserving the inherited lands", and the Romanian large lineage trend in relation to money incomes (Șerban 2000: 43).

given to the ethnographer by the same Romanian man was “to marry a German woman if you want to have beautiful children, marry a Magyar woman if you want to be happy in love, and marry a Romanian woman if you want to have ritual lineage commemoration.” This joke is consistent with the above statistical relevance of the genealogical memory among the Romanians.<sup>9</sup> Finally, another Romanian informant (60; the ethnographer’s host at Zăbala), once defined one of his neighbors as a “*hazitigân*” (“house-linked”, i.e., “domestic” Roma); this label was not used in the presence of that neighbour.

### CONCLUSION

Multi-ethnicity at Zăbala is not a static phenomenon. By exogamy or commerce, the Magyars, Romanians, and Roma are continuously changing and negotiating their status and relationships within the village community. The three local ethnic groups do not erase their particular cultural identity in favor of a new, more “homogeneous”, village population. This is not contradictory, taking into account on the one hand the important differences in the local genealogical memory and marriage patterns, but also the equally significant local bilingualism or co-operation in rural economy. Instead of being a premise for disruptive or exclusive trends at the level of the village community life, the local cross-cultural cohabitation appears to be a cohesive factor among the ethnic groups of Zăbala.

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<sup>9</sup> Șerban describes the “genealogical significance” among the Romanians at Zăbala in relation to their past “community organisation” (*devălmașie*), in the districts of Vrancea, Buzău, Dâmbovița, Făgăraș, where they originate from. The importance of genealogical memory is also expressed through the Romanians’ “rich lineage histories”, as accounts on their native places and on their ancient or recent ancestors (Șerban 2000: 39).

# PSYCHOLOGICAL TRAITS OF THE AGGRESSORS (FROM THE VIEWPOINT OF THE VICTIMS). A CASE STUDY

CORNELIA RADA, CRISTIANA GLAVCE

The Center for Anthropological Researches of the Romanian Academy performed in 2003–2004 a study with the subject “Domestic violence – an anthropological approach”. This paper partially values the results of this research, trying to identify the psychological profile of the aggressors, while making a brief review of the better known explanatory theories regarding the aggressive behavior.

## PROPOSED OBJECTIVES

### GENERAL OBJECTIVES

- identification and explanation of the social and individual reasons which favor domestic violence;
- identification of the main risk factors at the family level generating intra-family violence.

### SPECIAL OBJECTIVES

- identification of the socio-economical aspects of the victims and aggressors;
- determination of the frequency of violence types;
- investigation of the family origin, comparative evaluation of the following family dysfunctions: alcohol abuse, infidelity, poor involvement in child's education, fights within the family;
- poor budget administration, poorness, child abuse, parents' separation;
- determination of the religiousness level of victims and aggressors;
- estimation of the victim's health status;
- identification of the aggressor's and victim's psychological profile;
- determination of some categories of postviolence attitude.

ANN. ROUM. ANTHROPOL., 41, P. 127–133, BUCAREST, 2004

## METHODOLOGY OF RESEARCH

A sample of 84 women victims were interviewed based on a 77 items questionnaire. The psychological profile of the victims and aggressors could be determined based on the items asking the victim:

- to characterize the aggressor and herself by selecting of some traits out of 9 pairs of dichotomous traits;
- to express her the attitude as to the suffered aggression: 1) it was meant to be, 2) I am shocked but what can I do?, 3) I will no more accept it;
- to describe the aggressor during the violent behavior: 1) calm, 2) furious, 3) other, which.

Some other items emphasized the level of self-esteem, socio-professional integration, relations with the family and other people around (neighbours, colleagues) and the model of the family of origin.

The statistical data were analyzed using SPSS 11.5 statistical package and the final results were interpreted by the “Chi square” and the “t” tests.

## RESULTS AND CONCLUSIONS

None of the traits proposed for description was intensively characteristic for the victim and aggressor (see Tables 1–6). But we can notice some differences between the aggressor and the victim such as:

- The aggressor is rather perceived as: sad, authoritative, indifferent, uncontrolled and lazy while the victim declares herself as being: cheerful, submissive, interested, controlled and hard working.
- At the same time, a scale measuring the traits authority/submissiveness has at one end the aggressor (authoritative) and at the other end the victim (submissive) (see Tables 1 and 4). For a better understanding of the differences between the aggressor and the victim, see Graphs 1 and 2.
- Similarly, a scale measuring the traits controlled/uncontrolled has at one end the aggressor (uncontrolled) and at the other end the victim (controlled) (see Tables 3 and 6). Differences are illustrated by Graphs 3 and 4.
- Steadiness/nonsteadiness characterizes to the same extent the aggressor while the victim evaluates herself as rather steady than changeable (nonsteady) and more steady than the aggressor (see Tables 1 and 4). Differences are illustrated by Graphs 5 and 6.

The fact that the aggressor expresses rage, fury when violent in proportion of 91.7% (see Table 7) along with the revealed above aspects, make us believe that the aggressors have a low control capacity, a relatively choleric temper, are impulsive, following the rule “do as I say, now” (Littauer Florence, 1999, p. 69).



Table 1

## Aggressor's traits (I)

| Traits   | Frequency | Traits   | Frequency | Traits     | Frequency |
|----------|-----------|----------|-----------|------------|-----------|
| Gloomy   | 21        | Steady   | 10        | Submissive | 3         |
| Cheerful | 9         | Changing | 10        | Bossy      | 37        |
| N/C      | 54        | N/C      | 64        | N/C        | 44        |
| Total    | 84        | Total    | 84        | Total      | 84        |

Table 2

## Aggressor's traits (II)

| Traits      | Frequency | Traits    | Frequency | Traits | Frequency |
|-------------|-----------|-----------|-----------|--------|-----------|
| Indifferent | 19        | Patient   | 12        | Slow   | 1         |
| Interested  | 7         | Expansive | 12        | Active | 11        |
| N/C         | 58        | N/C       | 60        | N/C    | 72        |
| Total       | 84        | Total     | 84        | Total  | 84        |

Table 3

## Aggressor's traits (III)

| Traits   | Frequency | Traits       | Frequency | Traits      | Frequency |
|----------|-----------|--------------|-----------|-------------|-----------|
| Solitary | 7         | Controlled   | 7         | Lazy        | 27        |
| Sociable | 16        | Uncontrolled | 41        | Hard worker | 14        |
| N/C      | 61        | N/C          | 36        | N/C         | 43        |
| Total    | 84        | Total        | 84        | Total       | 84        |

Table 4

## Victim's traits (I)

| Traits   | Frequency | Traits   | Frequency | Traits     | Frequency |
|----------|-----------|----------|-----------|------------|-----------|
| Gloomy   | 5         | Steady   | 28        | Submissive | 38        |
| Cheerful | 31        | Changing | 3         | Bossy      | 6         |
| N/C      | 48        | N/C      | 53        | N/C        | 40        |
| Total    | 84        | Total    | 84        | Total      | 84        |

Table 5

## Victim's traits (II)

| Traits      | Frequency | Traits    | Frequency | Traits | Frequency |
|-------------|-----------|-----------|-----------|--------|-----------|
| Indifferent | 0         | Patient   | 18        | Slow   | 13        |
| Interested  | 22        | Expansive | 14        | Active | 23        |
| N/C         | 62        | N/C       | 52        | N/C    | 48        |
| Total       | 84        | Total     | 84        | Total  | 84        |

Table 6

## Victim's traits (III)

| Traits   | Frequency | Traits       | Frequency | Traits      | Frequency |
|----------|-----------|--------------|-----------|-------------|-----------|
| Solitary | 7         | Controlled   | 22        | Lazy        | 1         |
| Sociable | 31        | Uncontrolled | 4         | Hard worker | 39        |
| N/C      | 46        | N/C          | 58        | N/C         | 44        |
| Total    | 84        | Total        | 84        | Total       | 84        |

N/C = Not Characteristic

Table 7

## Aggressor's behavior during violent acts

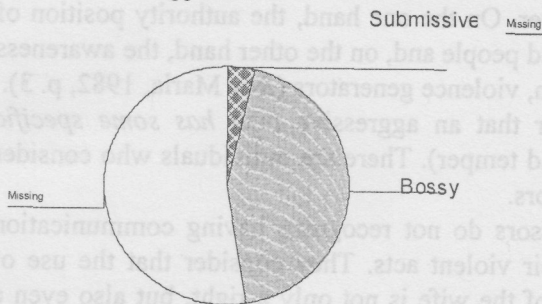
| Aggressor's behavior during violent acts | Frequency | Percent |
|------------------------------------------|-----------|---------|
| Calm                                     | 1         | 1.2     |
| Furious                                  | 77        | 91.7    |
| Mad                                      | 2         | 2.4     |
| Total                                    | 80        | 95.2    |
| Non response                             | 4         | 4.8     |
| Total                                    | 84        | 100.0   |

Littauer Florence shows that there is no good or bad temper, anyone has strengths and weaknesses. Taking into account the 20 weaknesses of the choleric, proposed by the author, we discover behind the aggressor the choleric type as a dominant personality profile. The 20 weaknesses are: bossy, unsympathetic, resistant, frank, impatient, unaffectionate, headstrong, proud, argumentative, nervy, workaholic, tactless, domineering, intolerant, manipulative, stubborn, lord-over-other, short-tempered, rush, crafty (Littauer Fl., 1999, p. 20). From this perspective we consider that the aggressor has very intense weaknesses of the choleric temper and can be characterized by the following: refuses to believe that he has a bad temper; considers that he is always right, does not admit the others' weaknesses; does not permit anybody to stay in his way; is satisfied only when he has control positions; considers that the others are weak and stupid; tends to look at the others like at marionettes (Littauer Fl., 1999, p. 135–140). In these circumstances it will be hard for his partner to impose herself and to impose something from the domestic activities and plans to the bossy choleric, having the underlined personality weaknesses typical for an aggressor.

Concluding from this approach that generally the choleric does not have compassion for people who are sick, weak, helpless, with unsatisfied emotional needs, make us believe that in this sample the aggressors have a very strong choleric type personality with extreme weaknesses.

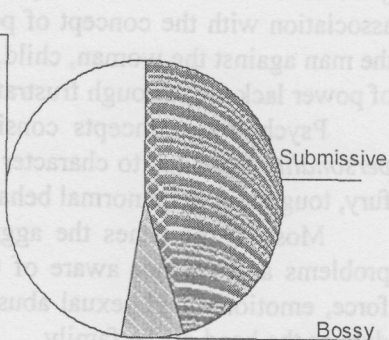
Graph 1

Aggressor



Graph 2

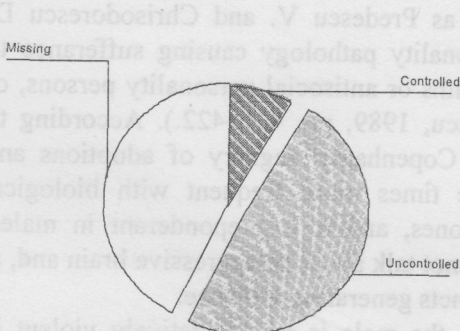
Victim



Bossy/submissive aggressor and victim

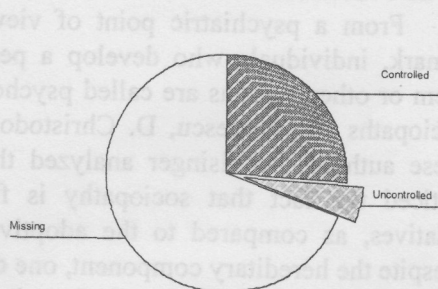
Graph 3

Aggressor



Graph 4

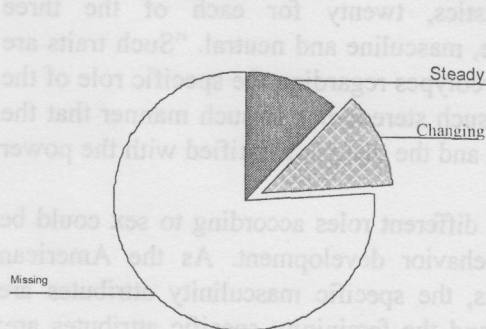
Victim



Controlled/uncontrolled aggressor and victim

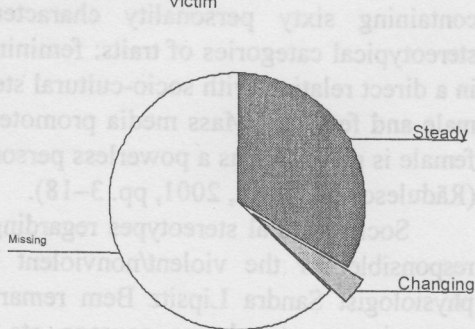
Graph 5

Aggressor



Graph 6

Victim



Steady/changing aggressor and victim

The great number of aggressions committed by men as compared to women gives us the basis for some explanations. Violence is approached by Roy Maria in association with the concept of power. On the one hand, the authority position of the man against the woman, child, old people and, on the other hand, the awareness of power lack are, through frustration, violence generators (Roy Maria, 1982, p. 3).

Psychology concepts consider that an aggressive man *has some specific personality traits* (as to character and temper). There are individuals who consider fury, toughness to be normal behaviors.

Most of the times the aggressors do not recognize having communication problems and are not aware of their violent acts. They consider that the use of force, emotional and sexual abuse of the wife is not only a right, but also even a duty as the head of the family.

In the analyzed sample, according to the victims' opinion, the percentage of aggressors who are calm, calculated, and planning their aggressive acts is very low (1.2%), predominantly they are furious, uncontrolled, "mad", "crazy" as the victims described them.

From a psychiatric point of view, as Predescu V. and Chrisodorescu D. remark, individuals who develop a personality pathology causing sufferance to them or other persons are called psychopaths or antisocial personality persons, or sociopaths (V. Predescu, D. Christodorescu, 1989, pp. 420–422.). According to these authors, Schulsinger analyzed the Copenhagen registry of adoptions and noticed the fact that sociopathy is five times more frequent with biological relatives, as compared to the adoptive ones, and it is preponderant in males. Despite the hereditary component, one cannot talk about an aggressive brain and, at the same time, one can not talk about instincts generating violence.

The feminist theories consider that the male is premeditatively violent in order to control and dominate the female according to the prejudice that the female is inferior to the male.

Sandra Lipsitz Bem, designed the Bem Sex Role Inventory (BSRI), containing sixty personality characteristics, twenty for each of the three stereotypical categories of traits: feminine, masculine and neutral. "Such traits are in a direct relation with socio-cultural stereotypes regarding the specific role of the male and female." Mass media promote such stereotypes in such manner that the female is perceived as a powerless person and the male is identified with the power (Rădulescu M. Sorin, 2001, pp. 3–18).

Socio-cultural stereotypes regarding different roles according to sex could be responsible for the violent/nonviolent behavior development. As the American physiologist Sandra Lipsitz Bem remarks, the specific masculinity attributes are aggressiveness, toughness, courage, etc. and the femininity specific attributes are: passivity, delicacy, submissiveness, precaution, etc., the social integration of boys and girls occurring according to such stereotypes. In this way boys' natural

aggressive tendency and girls' passive dependent tendency are consolidated (Căţoi Florentina, 2001, p. 31). All the studies emphasized the male tendency to violence. Although temperamental differences according to sex occur early, before the socialization process is definitely achieved, it is the experts' opinion that males tend to behave aggressively due to the masculinity attributes induced by the male-status.

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Les manuscrits (y compris l'explication des figures et la bibliographie), rédigés en français, russe, anglais, allemand ou espagnol, ne doivent pas dépasser 8 pages dactylographiées à double interligne.

Les figures et les diagrammes peuvent aussi être tracés à l'encre de Chine sur papier calque. Les figures en couleurs ne sont pas acceptées. Le nombre des illustrations et spécialement des photos doit être réduit au minimum possible. Les tableaux et l'explication des figures seront présentés sur page séparée. Les références bibliographiques, groupées à la fin de l'article, seront classées par ordre alphabétique. Les références d'un mémoire comprendront, dans l'ordre : le nom de l'auteur suivi du prénom (ou de ses initiales), le titre du périodique abrégé selon les usances internationales, l'année, le tome (souligne deux fois), le numéro (souligne une fois) et les pages. La référence d'un livre comprendra le titre de l'ouvrage, la ville et l'année.

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